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WORLD SWORDFISH FISHERIES

Volume II.

Africa and the Middle East

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

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WORLD SWORDFISH FISHERIES

An Analysis of Swordfish Fisheries, Market Trends, and Trade Patterns
Past-Present-Future

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Volume II.

Africa and the Middle East

Prepared by
The Office of Science and Technology

William B. Folsom

November 1997
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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Silver Spring, Maryland

PREFACE

The Division of International Science and Technology, National Marine Fisheries Service, no longer has an Africa and Middle East Desk Officer. As a result, this report does not contain the in-depth analysis provided in the other regional reports. The author, however, served as U.S. Regional Fisheries Attache to Africa from 1975-78 and visited many of the countries examined in the report and was able to provide some background information about local fisheries. The Division of International Science and Technology has historically maintained extensive files on African fisheries.

The author has attempted to provide information about world swordfish fishing operations in a factual format. In some instances, however, this can be very complicated. In 1991, for example, three European-designed, Japanese-style freezer longliners were built in the Astilleros Gondan SA shipyards at Figueras, Spain. The vessels included the *Al-Shafq*, the *Al-Nasim,* and the *Zarqa Al.* The owner of the vessels, Pêcheur Overseas, Inc. operated out of offices in Pireaus, Greece, London, England, and the Canary Islands. The vessels were flagged in Liberia, but based in Tripoli, Libya. They were to be operated by a crew of Japanese officers, and European engineers and deckhands from third world countries. The vessels were expected to fish across the Atlantic Ocean from the coast of West Africa to Brazil during annual tuna migrations and then back across the Atlantic Ocean toward South Africa. The vessels were also expected to fish for tuna in the Mediterranean. It was later reported that all three vessels were reflagged in Panama shortly after they were flagged in Liberia. The author assumes that these longliners are catching swordfishes which are probably being exported to European and/or Asian markets.

This survey depends heavily on unconfirmed press reports from many of the countries involved. The National Marine Fisheries Service (NMFS) does not certify the accuracy of these reports nor does their selection reflect the official view of the U.S. Government. The author is aware of many missing documents in the NMFS files which might have shed additional light on this subject. Unfortunately, shifting national priorities have resulted in a cutback in the Africa and Middle Eastern areas and NMFS files are not current. The author encourages individuals or firms with additional information to write to the author at the address provided in this report.

ACKNOWLEDGMENTS

The author wishes to express his special appreciation to Richard B. Stone for his interest and support in this project. Mr. Stone has worked tirelessly to support management programs for tunas and billfish for many years and was instrumental in promoting programs to manage and protect swordfish resources on a global basis. He retired from the National Marine Fisheries Service (NMFS) on January 3, 1996, after many years of dedicated service to the Government and the fishing industry.

Dr. Rebecca J. Lent contributed her time and knowledge by reviewing each section and offering her insight and guidance. Dean Swanson, Paul Niemeier, and Kimberly Blankenbeker in the International Fisheries Division, Office of Sustainable Fisheries in NMFS, were also extremely helpful in reading this document and providing constructive advice. Rachel Husted and Nina Loewinger of the Office of International Science both gave this report a final, careful proofing which helped uncover many small errors. Special thanks are due to Sarah A. McLaughlin who was instrumental in the preparation and the final review of this report. The author also wishes to thank Larry Snead and Brian Hallman at the Office of Marine Conservation (OES/OCM) at the Department of State for reviewing and providing State Department clearance for the document. A. Srour, Morocco's representative to the International Commission for the Conservation of Atlantic Tunas (ICCAT) and their leading swordfish scientist, reviewed the section dealing with Morocco's swordfish fisheries. Andrew I.L. Payne, who represents the government of South Africa at ICCAT meetings and Mrs. Joelle Row of the Broadbill Foundation both reviewed the section on South Africa's swordfish fisheries and provided information used in that report. Scott Smullen and Gordon J. Helm proofread the final draft and gave clearance for publication on behalf of the National Oceanic and Atmospheric Administration (NOAA).

Special acknowledgment is provided to William E. Martin, Deputy Assistant Secretary for International Affairs in the Office of the Assistant Secretary and Deputy Administrator of NOAA for his personal efforts to conserve and manage international stocks of swordfish in the Atlantic Ocean as United States Commissioner to ICCAT. The work of other U.S. Commissioners at ICCAT and those scientists and managers who assist in this effort are recognized. The author also wishes to acknowledge the helpful assistance of other international scientists and managers who work within the ICCAT organization or through other international bodies to regulate and manage world-wide resources of swordfish.

NOTES

The author used primarily statistical data collected by ICCAT in Madrid and the Food and Agriculture Organization (FAO) of the United Nations in Rome. Unfortunately, those data are not always consistent and some discrepancies exist. ICCAT and FAO data frequently do not agree with information supplied by various countries. In addition, ICCAT and FAO data are frequently updated, so that data reported in one statistical report may not agree with data provided in more recent publications. The author used press clippings reporting landings of swordfish by countries whose landing statistics show "no landings" in both ICCAT and FAO catch statistics. In other areas, the author used import statistics provided by the European Union (EU) to document shipments of swordfish from countries that do not report harvesting swordfish. The author believes that these instances are rare, but they do suggest that readers should allow for modest adjustments to figures cited in the report.

The author attempted to provide the reader with the latest available data. Initially, this report was written using 1994 data. However, a decision was made to use 1995 data (albeit partially incomplete) after this report was completed. Some data accurately reflects 1995 data, including United States and EU import statistics. Information provided in ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/26, Madrid, Spain, 1996, contained important updates. However, this report did not include a breakdown by types of fishing gear and, in some cases, did not include actual harvests of swordfish by some countries. Readers will have to refer to final reports to obtain the final 1995 figures.

Inaccurate statistics are frequently a problem encountered in dealing with many African countries. Limited funding for trained statisticians, limited budgets for publications, poor roads to distant landing points along hundreds of kilometers (km) of beaches, and other factors result in fragmentary reports and sometimes slow publication. Information about exports and imports are also difficult to obtain.

One important area of omission is the operation of flag-of-convenience vessels; that is, vessels flagged in a country without the resources necessary to enforce proper reporting and management procedures. These flag-of-convenience vessels operate in waters throughout the world and simply do not report their harvests, thus making it difficult for fishery managers around the world to track the actual status of different stocks of fish.

There is worldwide concern over the use of driftnets because of the indiscriminate harvesting capacity of these nets. The use of highseas driftnets -- stretching many km -- led to a UN resolution limiting the use of pelagic driftnets to 2.5 km in international waters. Driftnets typically consist of panels measuring 50 meters (m) in length that are linked together to form long nets. In many parts of Africa, fishermen still use "driftnets," but these driftnets typically are *anifa-anifa* driftnets that range from 90 to 350 m in length. Thus the term "driftnet" might be misunderstood by the casual reader. West African fishermen typically fish in small, wooden canoes which would quickly sink if the fishermen attempted to retrieve a net that stretched much more than 350 m. In North Africa, some fishermen also use driftnets (called *filet maillant* in French). The *filet maillant* was developed for French albacore fishermen and consists of panels of 50-m of netting that is linked together to form a long net. Most North African vessels are larger than the West African canoes and can handle driftnets up to 2.5 km in length. Those with larger power blocks can handle longer nets. Most North African states have adopted legislation limiting the size of driftnets used by their fishermen to 2.5 km and compliance appears to be the norm.

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I.

OVERVIEW

Twelve African and Middle Eastern nations reported landing 1,899 tons[1] of swordfish to the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 1994. The majority of the catch was made by Morocco which caught 1,068 tons in the North Atlantic and Mediterranean Sea. Algerian fishermen caught 600 tons and Tunisian fishermen caught 166 tons in the Mediterranean, while Ghanaian canoe fishermen landed 235 tons (reported annually for the period 1988-1992) in the South Atlantic. The importance of the fishing grounds off West and Southwest Africa is not simply the harvest of African fishermen -- mostly artisanal canoe fishermen -- but rather the potential for significant catches by European-flag or Asian-flag fishermen. The Spanish swordfish fleet moved into the South Atlantic in 1986 and by 1995 reported a harvest of 11,290 tons -- as compared with 39 tons harvested by Angola, Benin, Ghana, Côte d'Ivoire, Nigeria, South Africa, and Togo in these same waters in 1995. In the Mediterranean Sea, the North African nations face problems associated with over-exploitation during the past few decades that make catching swordfish increasingly difficult. Lack of vessels and a fishery infrastructure have damped fishing for swordfish in the Indian Ocean by East African and Middle Eastern nations. Kenyan fishermen reported modest harvests of swordfish in 1990, but no recent harvests have been reported. Fishermen from Djibouti catch swordfish from time to time, but only small quantities are landed. Fishermen from Oman, the United Arab Emirates, and Yemen also land small quantities of swordfish. Omani landings may increase in the near future if various joint venture projects sought by Omani fishing companies can be finalized. The French Overseas Department of La Réunion has a swordfish fishery that lands about 400 tons annually; this fishery is growing rapidly. Mauritius and the Seychelle islands also catch small quantities of swordfish, but also serve as important transshipping points for European and Asian-flag vessels. Angola, Cape Verde, the Côte d'Ivoire, Ghana, Guinea, Libya, Morocco, and South Africa are all members of ICCAT and are subject to its rules.

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Fishing grounds

African fishing grounds for swordfish extend from the Cape of Good Hope off South Africa to the Straits of Gibraltar and across the southern shore of the Mediterranean Sea to Libya. The fishing grounds are divided into three statistical areas. The first two areas include the South Atlantic Ocean and the North Atlantic Ocean and are based on a line drawn by scientists from ICCAT.[2] Among the African nations, Angola, Benin, Ghana, the Côte d'Ivorie, Nigeria, South Africa, and Togo catch swordfish in the South Atlantic (below 5° North) while Liberia and Morocco catch swordfish in the North Atlantic (above 5° North). The third fishing

area is in the **Mediterranean Sea** which stretches from the Straits of Gibraltar to the coast of Libya. On the other side of the African Continent, Kenya has reported catching modest quantities of swordfish in 1989-90 in the **Indian Ocean**. Omani and Yemeni fishermen, in cooperation with foreign-flag longliners, are harvesting increasing quantities of swordfish in the **Arabian Sea**. French fishermen operating out of La Réunion catch about 400 tons of swordfish annually with a fleet of about 15 vessels and this fishery is expected to grow in the next few years.

Fleet

Most African fishing "fleets" in the South Atlantic consist of wooden canoes equipped with a single outboard motor that is generally in the 45-horsepower range. Moroccan fishing vessels, however, and those of neighboring North African countries, include small longliners and other types of fishing vessels. Arab fishermen in the Arabian Sea use wooden *dhows, houris*, and *shashas,* as well as glass reinforced plastic (grp) or fiberglass skiffs. The French fishery out of La Réunion uses steel-hulled or large grp longliners built in 1995 to fish for swordfish.

Shipyards

Some African countries have shipyards that can make repairs to steel-hulled vessels. Some of the North African countries have facilities to build or repair ultramodern fishing vessels. Construction or repair to wooden canoes or small craft take place at fishing villages along the beach. Most Middle Eastern shipyards are fairly rudimentary and can service only wooden sailboats. Some shipyards, however, are able to build small grp boats.

Fleet operations and gear

A. Fleet operations

African fishermen in the Gulf of Guinea head to sea in four to five man canoes that carry longlines or *anifa-anifa* nets. The fishermen travel ten to 20 kilometers (km) out to the edge of the Continental Shelf where large pelagic fish come to the surface to feed at night. They set up their gear at night and haul the gear aboard their canoes in the early morning hours. They return to shore to sell their catch at daybreak.

North African fishermen generally fish closer to shore since they focus their efforts on the migration patterns of swordfish, either before or after spawning. This allows the fishermen to fish within a few km of the shoreline. North African fishermen use a variety of gear, including traditional longlines, traps (*madragues*), and other types of gear.

B. Gear

The fishing gear for large pelagics, such as swordfish, is basically the same from one country to another, although variations exist. Longlines are common throughout the region and the main difference from country to country is the length of the main line; the larger the vessel, the longer the longline. This is true with other types of fishing gear. Bigger vessels, with hydraulic equipment, for example, can work with larger and longer nets, while small 5-man canoes cannot.

In the mid-1980s and early 1990s, it appeared that large pelagic driftnets might be used to catch fish in many parts of Africa. However, the high incidental take of non-target species promoted the United Nations (UN) to adopt a ban on the use of large pelagic driftnets which became effective on December 31, 1992. The use of driftnets is currently limited to nets of under 2.5 km.

Catch

The harvest of swordfish by African countries has gradually grown from 548 tons in 1965 to a peak of 3,330 tons in 1988 and then to 2,166 tons in 1994. Harvests in the North Atlantic have been much higher than in the South Atlantic, and harvests in the Mediterranean are considerably higher than the harvest in both the North and South Atlantic combined. See table 1 for additional information on the total harvest by African states in the Mediterranean Sea and the Atlantic Ocean. The harvest of swordfish by African nations is small compared with the harvest of 44,375 tons harvested by all nations in the Atlantic and Mediterranean in 1994. The harvest by all nations in the South Atlantic amounted to 17,174 tons in 1994 while the total harvest by all countries in the North Atlantic was 15,642 tons in 1994. It should be noted that Spain alone harvested 7,987 tons in the South Atlantic in 1994.

A. Atlantic Ocean

Harvests in the Atlantic Ocean involved nine countries, mostly from West Africa. However, the leading African country in terms of its swordfish catch was Morocco, with fisheries off its coast using a variety of small vessels with longlines and other gear, as well as with traps (*madragues*). Ghanaian fishermen also caught large quantities of swordfish, using some longlines and *anifa-anifa* driftnets that range from 90 to 350 meters (m) in length in their canoe fisheries. See table 2 for details about the harvest in the North and South Atlantic Oceans.

1. South Atlantic

Ghana reported catches of 100 and 200 tons of swordfish in 1968-69. There were no further reported landings until 1978 when South Africa reported a harvest of 28 tons. Swordfish landings quickly increased to 914 tons by 1984 when Angola's swordfish fishing industry reached its peak production. Angola's harvest declined to 84 tons in 1987 and the fishery has never recovered. Ghanaian fishermen have increased their production and produced 235 tons out of the 264 tons reportedly caught in 1994. See table 3 for additional information about the harvest of swordfish by African fishermen in the South Atlantic.

2. North Atlantic

Moroccan fishermen have consistently reported landing swordfish from the period 1965 to 1994. The harvest includes catches made by small longliners (*palangriers*), traps (*madragues*), and other gear. Most of Morocco's catch of swordfish, however, is made in the Mediterranean Sea. Liberia, which is located above 5° North reported some modest harvests of swordfish between 1980 and 1992. It is likely that civil disturbances in Liberia have been responsible for the decline in catches in recent years. See table 4 for additional information about Liberia and Morocco's fisheries for swordfish in the North Atlantic.

B. Mediterranean Sea

The swordfish harvest in the Mediterranean Sea by North African fishermen has grown steadily from 214 tons in 1970 to 2,763 tons in 1988. The catch declined to 846 tons in 1989 and increased to 1,567 tons in 1994. The principal harvesters of swordfish in 1994 included: Morocco (733 tons), Algeria (600 tons), and Tunisia (234 tons). Libya reported good catches of swordfish between 1965 and 1968, but then stopped reporting any harvests. The 1995 total harvest for the Mediterranean includes only the Moroccan harvest of 289 tons. See table 5 for information about the North African fishery for swordfish in the Mediterranean Sea between 1965 and 1995.

C. Indian Ocean

Few of the African and Middle Eastern countries bordering on the Arabian Sea and Indian Ocean reported harvesting swordfish during the period 1992-93. It is possible that statistical data will eventually be submitted to the Food and Agriculture Organization (FAO) of the UN in Rome which tracks fishery landings. However, it is believed that swordfish are being harvested in these waters, mostly in cooperation with European and Asian-flag tuna fishing vessels, and harvests of swordfish may be included in catch reports made by those nations. French fishermen on the island of La Réunion catch about 400 tons annually and this is expected to increase in the future as French harvests have grown sharply in the past few years.

Transshipments

Information about transshipments of swordfish in most of west and southwest Africa is fairly difficult to obtain. Tuna has long been a commodity that is transshipped through many ports, most notably Abidjan (the Côte d'Ivoire), Dakar (Senegal), Freetown (Sierra Leone), and Las Palmas (Spain) in the Atlantic and Cape Town (South Africa), Mombassa (Kenya), and Port Louis (Mauritius) in the Indian Ocean.[3] Statistical details on transshipments of swordfish however, are not available. It is possible that the relatively small quantities of swordfish that are shipped may account for this lack of information or that most swordfish are exported directly from the harvesting nation. Sometimes import statistics from major importing countries reveal significant shipments of swordfish being made from countries that report little or no harvests of

swordfish. For example, the European Union (EU) reported imports of 1,079 tons of swordfish valued at more than $3 million from South Africa in 1994. South Africa, however, reported landings of only one ton of swordfish in 1994. These shipments doubtlessly are from a fleet of 90 Japanese longliners that reported a catch of 680 tons of swordfish in South Africa's waters in 1994. If correct, these transshipments should be shown as part of Japan's catch and exports of swordfish instead of South Africa's exports of swordfish.

Processing and products

Swordfish is generally gilled or gilled-and-gutted at sea. The whole fish is usually sold as chilled or frozen fish when landed. The fish can be cut into chunks or steaks at the retail level. Swordfish is also smoked for sale within African communities; smoked swordfish is especially popular in the Côte d'Ivoire.

Companies

Information on companies dealing with swordfish is relatively scarce and is addressed in the individual country sections.

Trade

Swordfish is a valuable export commodity and most of the product is immediately exported. However, some countries (mostly in North Africa) sell part of their catch to to local hotels and restaurants that cater to the tourist trade. In some of the West African countries where fishermen cannot land their catch close to ports with freezer facilities, the product may be split into sections and smoked or dried.

A. Exports

Swordfish is a valuable export commodity and is *probably* exported from almost every African and Middle Eastern country that fishes for swordfish on a commercial basis. This includes South Africa, which has a recreational fishery for swordfish (landings amounted to one ton in 1994). However, information on exports from various African countries does not always identify swordfish as a specific export commodity. The more sophisticated countries may include them under "fresh or chilled" seafoods or sometimes as "tuna and tuna-like fish" or "fresh-frozen" seafoods.

The EU is one of the most important markets for swordfish caught by fishermen in the waters off Africa. EU imports of swordfish from Africa, the Middle East, and the Indian Ocean have increased from 1,731 tons in 1991 to 4,796 tons in 1994 and then declined to 2,614 tons in 1995.[4] Key suppliers in 1995 included: South Africa (682 tons), Morocco (540 tons), Mauritius (377 tons), La Réunion (301 tons), Senegal (281 tons), Namibia (182 tons), and Guinea (179 tons). Some of these exports consist of transshipments of swordfish landed by foreign-flag vessels operating in local waters. As anticipated, exports of frozen swordfish accounted for the bulk of shipments (1,879 tons), while fresh swordfish exports (735 tons) were mostly made from countries bordering the major EU markets or from La Réunion, where frequent air service to France make shipments of fresh swordfish possible. Small quantities of frozen fillets were also reported (see table 9 for additional details).

The United States, while a major market for swordfish, is not a very important market for African states exporting swordfish. The United States imported 4,379 tons of fresh and frozen swordfish worth $30 million in 1994. U.S. imports of swordfish from *all* African countries between 1980 and 1994 amounted to only 31 tons! This is even more dramatic when one realizes that 22.4 tons were imported from South Africa in 1994 alone. In 1995, the U.S. imported 159 tons of frozen swordfish worth $887,000 from South Africa; this was a significant increase, and probably reflects landings by Asian-flag nations in Cape Town (see table 10 for additional details).

B. Imports

Very few African nations are thought to import swordfish. The exceptions are Mauritius and South Africa which have imported reasonable quantities of swordfish from Japan in recent years (see table 11). In 1992, for example, these two countries imported 202 tons worth $687,000 from Japan.[5] Japan also exported small quantities of swordfish to the Canary Islands, which technically should be listed as an export to the EU. The Côte d'Ivoire is thought to import small quantities of smoked swordfish from Senegal, but details on this trade are not available. Other African states also purchase small quantities of smoked swordfish from artisanal fishermen from time to time, but these exports are not documented.

International relations/joint ventures

African fisheries range from artisanal, canoe-based to those employing highseas vessels equipped with modern technology. Fishing grounds also vary, from the rich grounds off Mauritania to the relatively nutrient-poor waters along the narrow Continental Shelf found off the Côte d'Ivoire. The waters off Africa have attracted foreign fishermen for many generations, especially from former colonial powers. Beginning in the late 1950s and early 1960s, African nations gained independence and began excluding their former colonial owners from their national waters. This process was accelerated in the 1970s as many nations around the world extended their Exclusive Economic Zones (EEZ) to 200 miles. Some former colonial powers recognized the changes sweeping the continent and negotiated bilateral fishery agreements with some of their former colonies.

In 1977, the EU began negotiating international fishery agreements with various African states on behalf of their EU-member states. The first agreements simply replaced existing bilateral agreements reached between France, Spain, Italy, the United Kingdom and their former colonies. Agreements with Mauritania, Guinea (Bissau) and Guinea (Conakry) and Senegal were among the first negotiated in West Africa. The most important agreement came when the EU signed an agreement with Morocco in 1988, which allowed nearly 800 EU vessels access to Morocco's territorial waters. The EU has gradually increased the number of international fishery agreements; by 1993, a total of 19 agreements, valued at nearly $775 million in direct payments, had been signed with African and Indian Ocean countries. African states also negotiated bilateral fishery agreements with Japan, Taiwan, and the Republic of Korea in the 1970s and 1980s. Asian fishermen were especially attracted to tuna and billfish found in the eastern and southern Atlantic Ocean.

A. International relations

There are very few opportunities remaining among the Mediterranean countries to develop cooperative programs to fish for swordfish because stocks are overfished. The only realistic opportunities are for all of the Mediterranean countries to cooperate with ICCAT in its efforts to conserve swordfish stocks in the Mediterranean by reducing harvests.

Opportunities to establish cooperative agreements in the North Atlantic exist further down the coast of the African continent. The EU already has a network of access agreements with many West African nations (see the West European section which details these agreements) and it is very possible that EU negotiators will include swordfish among the species they seek to target in future revisions of existing accords. Almost all of these accords already include tuna. It is likely that swordfish are now being caught as bycatch and are transshipped to European markets through Dakar (Senegal), Freetown (Sierra Leone), or Las Palmas (Spain). It should be noted that ICCAT and other world scientists are already concerned about the level of fishing in the North Atlantic and have established limits to fishing in that area. Thus, any development of swordfish fishing in the zone down to Liberia would be a cause for international concern.

The development of swordfish fishing in the South Atlantic offers the greatest possibilities. EU negotiators -- prompted by Spanish longline fishermen – are likely to seek to include swordfish among access agreements that are due to be renegotiated in the next few years. Angola could be a target since 815 tons were harvested in 1986 by Angolan fishermen. Spanish longliners have considerable experience in the Gulf of Guinea and presumably they would enjoy access to Angola's waters. The EU has been very successful in supporting their fishermen by opening fishing rights to distant waters through access agreements.

B. Joint ventures

There are few signs that European nations are currently seeking opportunities to establish joint venture swordfish fishing operations with North or West African states. Some African countries would welcome an opportunity to participate in a joint venture operation. The South Atlantic is one of the few remaining areas where catch rates for swordfish remain high. It is logical to expect that some joint venture operation focusing on swordfish will be created before the turn of the century.

Future trends

Swordfish harvests by African nations are expected to grow slowly, with most of the growth coming from North Africa's fisheries in the heavily fished Mediterranean. The use of new gear is expected to harvest more swordfish as they migrate to their spawning grounds off Italy and Spain and will contribute to lower catches among some European countries. Artisanal canoe fishermen in West and Southwest Africa are not expected to expand their harvests significantly in the next few years. Growth of fisheries in East Africa also appears limited by poor economic conditions. It is likely that Omani fishermen may negotiate access agreements with either Spanish or Asian-flag longliners to fish for tuna in Omani waters beginning in the mid-1990s. Approximately 50 licenses could be involved, which represents a fairly significant increase in fishing effort; this would generate increased landings of swordfish. The future will be controlled by European fishermen who may seek to include rights to fish for swordfish in access agreements with many of the African nations where the EU already has working relationships. French fishermen have found fishing for swordfish in the Indian Ocean to be increasingly profitable and the number of vessels heading for La Réunion has grown in recent years; some of these vessels are ultramodern and capable of holding their catch at very low temperatures for months at a time. The high level of exports of swordfish through South African ports is also deserving of careful consideration. It is highly likely that the swordfish being caught by Asian-flag longliners off the southern coast of Africa are being harvested as they migrate between the Indian Ocean and the South Atlantic Ocean.

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II.

COUNTRY REPORTS

A.

ATLANTIC OCEAN

Harvests of swordfish by African fishermen in the Atlantic Ocean involve nine West and one North African countries, including Angola, Benin, Côte d'Ivoire, Ghana, Liberia, Morocco, Nigeria, Senegal, South Africa, and Togo. The harvest of swordfish by African fishermen in the Atlantic Ocean peaked at 1,127 tons in 1986 and has declined in recent years to around 600 tons. The leading catch of swordfish was made by Morocco off its Atlantic coast by a variety of small vessels using longlines or other fishing gear or by fishermen using traps (*madragues*). Ghanaian fishermen reported catching 235 tons of swordfish during the period 1988 to 1992, using some longlines and small *anifa-anifa* drifting nets in their canoe fisheries.

It is noteworthy that the EU reported importing 1,260 tons of swordfish from the various African nations that border along the Atlantic Ocean in 1995. This compares with reported catches of around 400 tons leaving 860 tons unaccounted for (some catches may not be reported or may be reported at a later date). It is believed that some of these imports are transshipments made by European- and Asian-flag vessels fishing for swordfish in the region.

1

SOUTH ATLANTIC OCEAN

The seven African nations bordering the South Atlantic Ocean (Angola, Bénin, Côte d'Ivoire, Ghana, Nigeria, South Africa, and Togo) reported catching 39 tons of swordfish in 1995; however, this figure does not include Ghana's harvest of about 200 tons. Ghana reported catches of 100 to 200 tons of swordfish in 1968-69. There were no further reported landings until 1980 when Ghanaian fishermen caught 110 tons of swordfish. Catches then declined before increasing steadily through 1988-94 when harvests of 235 tons were reported. South Africa has reported harvesting small quantities of swordfish, mostly as a bycatch in other fisheries, over the past few decades. Swordfish landings by African fishermen in the South Atlantic reached 914 tons in 1984 when Angola's swordfish fishing industry reached its peak production. Angola's harvest declined to 84 tons in 1987 and then declined to zero in 1990; the fishery has never recovered. Namibia shows promise for becoming a supplier of swordfish in the future.

The importance of the South Atlantic swordfish fishery lies not in the African (which are in the 200 to 300 ton range), but rather in the fisheries conducted by European, Asian, and unregistered or flag-of-convenience vessels that operate in African waters. The swordfish harvest of Spanish vessels in the South Atlantic, for example, dwarfs the catch of African nations: Spain reported catching 11,290 tons of swordfish in the South Atlantic during 1995.[6]

1.1

ANGOLA

Angola has a long coastline and very significant fishery resources. Portuguese residents conducted major fisheries in Angola before it won its independence from Portugal on November 11, 1975. A civil war followed for nearly 20 years that pitted Unita rebels against the Socialist government with disastrous consequences for Angola's once flourishing fishing industry. In the interim, large quantities of fish were harvested by Cuban, Italian, Nigerian, Portuguese, Spanish and Soviet-flag vessels. A cease fire was signed on November 20, 1994, which has brought a measure of stability to the country. Recent efforts to rebuild the industry have unfortunately been hampered by unusual oceanographic conditions which adversely affected fishery resources during 1994-95. Angola is a member of ICCAT.

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Fishing grounds

Angola is a southwest African nation that lies between Namibia to the south and Zaire to the North. The country is large, about the size of Texas, and has a coastline of 1,600 km. Angola has a 200-mile Exclusive Economic Zone (EEZ) encompassing 330,000 km^2 and a Continental Shelf area of 51,000 square km. These are some of the most productive fishing grounds in the world (together with those off Namibia) thanks to the upwelling of coastal waters associated with offshore trade winds and the convergence of two ocean currents – the nutrient-rich Antarctic waters brought northward by the Benguela current and the warmer Guinea Currents. These oceanographic conditions produce a concentration of plankton that nourishes vast fish stocks off Angola and neighboring Namibia.[7] However, oceanic currents are subject to change and during 1994-95 altered conditions produced "drought" conditions that significantly reduced the productivity of Angola's fisheries.[8]

Fleet

There were 1,200 small, artisanal vessels operated by 23,500 artisanal fishermen in the Angolan fishing fleet in 1987. There was also a commercial fleet of 436 decked, multipurpose vessels operated by 500

commercial fishermen. Only about 60 percent of these vessels were operational in 1987. There were an additional 50,000 part-time fishermen in the Angolan fisheries in 1987.[9]

Shipyards

Swedish assistance programs have established a fisheries education center in Luanda. The program introduced small grp open boats with inboard diesel engines. Part of the project includes workshops with service facilities to build and/or maintain these vessels and their equipment.[10]

Fleet operations and gear

A. Fleet operations

No information was available about swordfish fishing in Angola's waters. In view of the small quantities of swordfish caught, it is likely that swordfish is a bycatch associated with directed tuna fisheries.

In the late 1960s, Angolan fishermen fished for tunas using small vessels equipped with 15- to 50-horsepower engines. They caught little tunny, yellowfin, bigeye, and skipjack within 50 km of the coast. A few large tuna vessels, including purse seiners from Portugal and Cape Verde, fished for tuna out of Angola; all of the catch reportedly was shipped to metropolitan Portugal as frozen product.[11]

B. Gear

Gillnets are the most commonly used type of fishing gear in Angola's fisheries. Other types of gear include beach seines, handlines, bottom set lines, weirs, and fish barriers.[12]

Catch

A. General

Angola's record marine catch reached 600,000 tons in 1972 before the civil war disrupted the fishing industry. The catch consisted mostly of horse mackerel, sardinella, pilchards, and anchovy.[13] Angola's marine fisheries have gone from 111,300 tons in 1989 to 80,700 tons in 1993.[14] Cunene horse mackerel (*Trachurus trecae*), sardinellas, and various freshwater and marine fish accounted for the bulk of Angola's landings in 1993.

B. Swordfish

Angola reported a harvest of 26 tons of swordfish in 1984, 228 tons in 1985, 915 tons in 1986 and 84 tons of swordfish for the years 1987-89, but no further landings have been reported.[15]

Ports

Key Angolan fishing ports include Ambriz, Cabinda, Lobito, Luanda, Malogo, Namibe, Porto Amboim, and Soyo.

Transshipments

It is believed that shipments of frozen tuna have gone through the port of Luanda and that future shipments could increase as the infrastructure improves. Information about transshipments, particularly of swordfish, is not available.

Processing and products

Swordfish is probably landed fresh, whole, gilled, or gilled-and-gutted by artisanal fishermen. It is likely that swordfish is landed along Angola's extensive coastline where it is eaten by fishermen and their families or is smoked for sale in neighboring markets.

Companies

There is no information on any companies dealing with swordfish in Angola.

Trade

Demand for fish in Angola is high and per capita consumption was 24 kilograms (kg) in 1988, which is higher than the average 12.5 kg consumed in most West African countries in that year.[16] Angola has a population of ten million, including about two million who live around the capital city of Luanda. Continued growth of Angola's fisheries or imports of expensive seafood will be required if the need for seafood is to be met in the future.

A. Imports

Angola's imports of fishery products have gone from $66 million in 1984 to a high of $70

million in 1988. Imports have since declined to $13 million in 1993.[17] This would suggest that either the industry has begun to make progress in reducing the Nation's dependency on imported fishery products, or that other, perhaps cheaper, protein sources have been substituted for imports.

B. Exports

Exports of fishery products, by contrast, have gone from $6 million in 1988 to $15 million in 1993.[18] This suggests that efforts to harvest seafood products needed to generate export earnings are producing positive results.

International relations/joint ventures

Fishing inside Angola's EEZ during the 1970s and 1980s was approved for Cuban, Italian, Nigerian, Portuguese, Spanish and Soviet-flag vessels. Fishing inside the Angolan EEZ was the result of bilateral agreements as well as joint venture arrangements.[19] Foreign vessels fishing inside Angola's EEZ reportedly caught more than 400,000 tons of fish in 1987. This was about 80 percent of the total harvest of fishery products in these waters. Some experts believe that the foreign catch was probably higher than reported, bringing the total harvest closer to 600,000 tons.[20]

A. International relations

One of the first fisheries agreements signed by the newly-independent Angola was with the Soviet Union on May 14, 1976.[21] This was followed by a second agreement on April 6, 1979[22] and a third agreement in January 1984.[23] The fisheries agreement with the Soviet Union is "an important component for supplying the population" of Angola according to a statement made by Ramos da Cruz, Fisheries Minister of Angola in an interview in March 1992. He noted that Soviet trawlers caught 150,000 tons of fish in 1990 and unloaded 70,000 tons in Angolan ports for consumption by local inhabitants.[24]

Angola and European fishing nations also signed a number of fishery agreements. Spain signed the first fisheries agreement on June 11, 1980,[25] and then extended the agreement through June 11, 1994, in an accord signed in May 1983.[26] Angola and a private French company, Société Française, reached a fishing agreement in July 1983.[27]

On May 3, 1987, the EU concluded a two-year agreement with Angola permitting EU fishing. The agreement replaced a bilateral agreement between Spain and Angola. It provided for 25 tuna seiners and for an unspecified number of shrimp trawlers to harvest 10,000 tons of fish and shrimp in Angolan waters in exchange for $25 million in payments by the EU.[28] The two countries subsequently extended the agreement from May 3, 1989, to May 2, 1990.[29] The extended agreement allowed EU vessels to catch 5,000 tons of shrimp per year and to harvest tuna using 28 vessels. An additional three trawlers and two longliners were to fish on an experimental basis.[30] The agreement was extended on May 3, 1990, to May 2, 1992, and provided access for 24 shrimp trawlers, 28 tuna freezing vessels, and five tuna seiners. The EU agreed to pay $20 million to Angola for these fishing rights.[31] Specific rights to harvest swordfish were not identified in these agreements.

Angola is a member of ICCAT.

B. Joint ventures

Namibian authorities approved a number of joint venture operations during the 1980s that permitted Cuban, Italian, Nigerian, Portuguese, Spanish and Soviet-flag vessels to fish inside the Angolan EEZ. Some of these ventures required a percentage of the catch to be landed for local consumption. These landings were made in place of payments of $7,000 per month per vessel.[32]

Four Portuguese tuna vessels began fishing in Angola's waters in November 1989, as a result of the EU agreement with Angola. The venture was between the Angolan Government and two Portuguese fishing companies, COFACO and ZATUN. It was expected that the venture would include a refrigerated ship from Japan, the intended market for the tuna catch.[33]

Future trends

The Government of Angola began a program to rehabilitate and develop its fisheries in 1986. Efforts were focused on both marine and inland fisheries. Foreign technical assistance has helped this process. Donor financing projects have included the purchase of 14 trawlers (assistance from Italy) and 37 seiners (assistance from Spain).[34]

The future of Angola's fisheries is expected to include vessels from EU member states. Spain, in particular, has benefited from its long relationship with Angola.[35] Spain already operates 56 vessels in Angola's waters.[36] Portugal and Italy have also profited from Angola's marine resources.[37] It is logical to assume that Spanish, Portuguese, and Italian fishermen will seek to include swordfish among the species included in any revision to EU-Angola fishery agreements. It is likely that Spain (which already has a swordfish fishing operation in the South Atlantic) will be the first to seek this type of agreement and will move quickly to begin fishing in these rich waters.

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1.2

BÉNIN

The République Popularie du Bénin (formerly Dahomey) ranked as the second highest African producer of swordfish (called *ajètè* or *adjètè*) in the South Atlantic region in 1995 with a harvest of 24 tons. Unfortunately, Bénin withdrew from ICCAT on December 31, 1994.

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Fishing grounds

Bénin is located between Nigeria and Togo in the Bight of Bénin in the Gulf of Guinea, and has a small coastline of about 121 km, a Continental Shelf of 3,200 square km, and an EEZ of 42,350 km^2. The coastline has only one major fishing port (Cotonou) and most of it is subject to heavy surf that makes fishing difficult.

Fleet

There were 2,000 artisanal fishermen operating 429 canoes in 50 landing ports in Bénin in 1982.[38] The industrial fleet consisted of three vessels that year.[39] It grew to nine vessels in 1986 and then declined to three vessels in 1988. These vessels were owned by Belipeche[40] (two vessels) and the State-owned SOGEMA (one vessel).[41] The canoe fleets grew to 654 vessels in 1988[42] and included about 3,211 fishermen (both inland and marine). Of the 654 canoes, approximately 288 were equipped with outboard engines.

Shipyards

The local shipbuilding industry is virtually nonexistent, although coastal villagers build artisanal dugout canoes.

Fleet operations and gear

There are ten to 12-knot winds off the coast of Bénin that make it difficult for many canoe fishermen to operate from many beaches. Bénin lacks natural harbors and thus fishing was limited until the port of Cotonou was built in 1963. This allowed the artisanal fisheries to grow and stimulated the beginning of a modest commercial fishing fleet. The port of Cotonou is one of the few ports in Bénin where fishing vessels can be safely launched or landed.[43]

The second event that helped stimulate Bénin's offshore fishery was the arrival of large Ghanaian canoes and purse seines. Ghanaian fishermen began catching large pelagic fish such as tunas, sharks, and billfish, using large mesh nets (called *anifa-anifa*) in 1974. The net is set at night and is allowed to drift near the edge of the Continental Shelf. Large pelagic fish, such as swordfish, are caught as they come to feed near the surface. The net ranges from 90 m to 360 m in length and from nine m to 18 m in depth.[44] Beninese fishermen use six types of fishing gear, including beach seines, sardine nets, lines for catching sharks (*gbonlebo*), encircling nets for large or small pelagic species (*waca* or *wici*), pelagic gillnets (*mahoundo*), and longlines.[45] Line fishing requires fishermen to buy bait and ice. Beninese fishermen use ten 200-m lines to make a single line for fishing.[46]

Beninese fishermen operating with Ghanaian fishermen have apparently enjoyed some success in catching swordfish.[47] The first reported landings of swordfish were registered in 1981 when 18 tons were caught. It is likely that Beninese fishermen use a variety of nets, including the *anifa-anifa* nets, encircling nets, and floating longlines to harvest pelagic species, including swordfish.

Catch

A. General

The Government of Bénin requires that all fish caught within the Beninese EEZ be off loaded at the port of Cotonou for sale within Bénin. Shrimp caught within Bénin's EEZ, however, are exempt from this requirement. Consequentially, the licensing fees for shrimp vessels are higher than those for other fishing vessels. All vessels, regardless of catch, must declare the composition of their catch and undergo an inspection at the port of Cotonou.[48]

B. Swordfish

Swordfish landings in Bénin began in 1981 when 18 tons were harvested. Landings peaked at 90 tons in 1985 and then declined to 13 tons in 1987. The catch averaged around 25 tons for the period 1989-95. These are fairly small quantities, but they rank Bénin as the second largest producer of swordfish in West Africa after Ghana in terms of total landings. The 1995 catch was 24 tons. Much of Bénin's harvest of swordfish is likely exported.

Transshipments

Figures from the autonomous port of Cotonou indicate that, for the first nine months of 1992, 10,523 tons of frozen fish were off-loaded in Cotonou, including 2,526 tons being transshipped to Nigerian markets. This figure, however, includes fish not caught in the Beninese EEZ. The Government of Bénin requires that all fish caught in the EEZ be sold within the Bénin market.

Processing and products

Swordfish caught in Bénin probably either is sold fresh or smoked as is the custom in West Africa. Some swordfish might be sold by a State-owned company called Société Nationale de la Pêche (SONAPECHE) as chilled or frozen fish to local restaurants and hotels. Any swordfish destined for export markets would have to be frozen.

Companies

SONAPECHE had a fleet of eight refrigerated trucks and a cold storage facility that could accommodate 500 tons of frozen fish. The company sold some fish as fresh or as a frozen product through a system of fish markets.[49]

Trade

A. Imports

Bénin imports fish and shellfish, but is not believed to import swordfish.

B. Exports

Export statistics for swordfish are not available. The EU reports no imports of swordfish from Bénin, although it does report importing swordfish from neighboring Togo.

International relations/joint ventures

A. International relations

According to the Government of Bénin fishery officials, there are no bilateral fishery agreements currently existing. Bénin has participated in the UN Conference on the Law of the Sea, and "adheres to these regulations and precedents". Bénin receives no specific tariff preferences as a result of bilateral

fisheries accords. However, many Béninese export commodities (including fish) receive preferential treatment.

Bénin withdrew from ICCAT effective December 31, 1994.

B. Joint ventures

No joint ventures currently exist in Bénin. Under a previous regime a joint Bénin-Libyan concern existed ("hen-lyb-peche"), which was aimed at the Beninese domestic fresh fish market. This venture has since ceased to exist, however. Government of Bénin fisheries officials speculate that the closing of this venture is more related to the recent change of Beninese political regimes (from Marxist-Leninist to pluralistic democracy) than the profitability of the enterprise.

Regulations governing the establishment of joint ventures are complex.[50] Government of Bénin fisheries officials report that few fishing companies choose to endure the laborious process to become legal. In 1992, only 15 vessels were certified. This number has remained relatively stable since 1980. Most vessels are of Nigerian origin; those vessels of European origin are reportedly French, Greek, or Portuguese. Officials of the Government of Bénin were unable to provide a precise accounting of the nationalities of fishing vessels licensed. Species chiefly fished are shrimp, lobster, and tuna.

Future trends

It is unlikely that Bénin will expand its harvest of swordfish in the near future. Harvests are likely to average less than 30 tons annually, although higher harvests are possible if swordfish migrate close to Bénin's shoreline.

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Table 1. BÉNIN--Total landings of swordfish in the South Atlantic, 1965-94.

Year	Catch	Year	Catch	
	Metric Tons		*Metric Tons*	
1965	0	1981	19	
1966	0	1982	24	
1967	0	1983	0	
1968	0	1984	39	
1969	0	1985	90	
1970	0	1986	39	
1971	0	1987	19	
1972	0	1988	19	
1973	0	1989	24	
1974	0	1990	28	
1975	0	1991	28	
1976	0	1992	26	21*
1977	0	1993	26	22*
1978	0	1994	0	25*
1979	0	1995	0	24*
1980	0	1996	n.a.	n.a.

Source: ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, 1995, p. 69 and (*) FAO, unpublished report (data for 1992-95).

1.3

CÔTE D'IVOIRE

The Côte d'Ivoire (formerly known as the Ivory Coast) has relatively poor marine resources inside its territorial waters, but once boasted one of the finest fleets of tuna fishing vessels in the world thanks to abundant resources of tuna in the Gulf of Guinea. Catches of swordfish (called *espadon*) are small and irregular; 24 tons were reportedly harvested in 1995. The EU reports importing 113 tons of frozen swordfish from the Côte d'Ivoire in 1994 and this decreased to one ton in 1995.

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Fishing grounds

The Côte d'Ivoire borders Liberia to the west and Ghana to the east. It has a coastline of 515 km and an EEZ of 200 miles with a total area of 30,500 km^2. There are few natural harbors along the beach and heavy surf makes it difficult to launch or land artisanal canoes.

The Continental Shelf south of Abidjan is slender (5 to ten nautical miles). This is important to a country where most of the fishing fleets consist of canoes. The fishing grounds can be reached in less than six hours in a canoe with a 40-horsepower outboard engine which allows canoe fishermen to set their nets just over the continental slope where fishing for large pelagics is good, without undertaking long voyages. The Vridi channel at the entrance to the port of Abidjan can be easily reached at any time and under any weather conditions.[51] Unfortunately, a narrow Shelf makes it difficult to find resources of fish and shellfish found off the coasts of other African countries which have broad Shelves. The Ivorian situation is further complicated in that its waters are naturally poor because of the weak upwellings essential for the growth of marine life.[52]

Fleet

At one time, the Côte d'Ivoire boasted of having some of the most modern tuna clippers in the world. The swordfish fishing fleet, unlike the tuna fleet, consists mostly of artisanal canoes that fish close to the Continental Shelf at night. There were approximately 3,000 canoes in the Côte d'Ivoire in 1980.[53]

Shipyards

The port of Abidjan has facilities to repair fairly large fishing vessels. There are many small villages where artisanal canoe fishermen build dugout canoes or repair small outboard motors.

Fleet operations and gear

Ghanaian fishermen introduced a specialized method of catching large pelagic fish using large, mesh nets (*nina-nina*) to the Côte d'Ivoire in 1984. The fishery operates at night with drifting gillnets set perpendicular to the coast along the edge of the Continental Shelf where it entangles large pelagic fish.[54]

Catch

A. General

The Ivorian catch of fish and shellfish amounted to 70,000 tons in 1993. This is 15,000 tons below the average of 85,000 tons of the past few years. Round sardinella (*sardinella aurita*) harvests contributed 14,500 tons to the Côte d'Ivoire's landings in 1993. Bonga shad and various freshwater fish helped add to the total fish caught. Despite a history of catching large quantities of tuna in the 1980s, there were no reported catches in 1993.

B. Swordfish

According to ICCAT, Ivorian landings of swordfish averaged ten tons between 1984 and 1990. The harvest then increased to 21 tons in 1991, declined to 15 tons in 1992, and then increased to 24 tons for the years 1994-95 (see table 1). A different source, however, reports that harvests of swordfish in the Côte d'Ivoire reached 13 tons in 1988, then declined to seven tons in 1989, and returned to ten tons in 1990. Swordfish landings then increased to 21 tons in 1991 and 24 tons in 1994 and 1995 (for information about this conflicting data see table 2).[55]

Transshipments

The port of Abidjan is one of the most important transshipment centers for tuna in Africa. Large cold stores, ship repair, and maintenance facilities, combined with good weather help make Abidjan attractive to foreign fishermen. Transshipments of tuna reached 100,000 tons by 1978 and more than 500 port calls were made by foreign vessels. Countries using the port included France, Japan, Morocco, Panama, South Korea (ROK), Senegal, Spain, and the United States.[56] Tuna landed by the Ivorian tuna company Societe de Vente de Thon Congele (SOVETCO) was another important firm transshipping tuna to markets throughout the world.[57] Little information, however, is available on transshipments of swordfish through Abidjan.

Processing and products

Swordfish is probably gilled or gilled-and-gutted and then exported as frozen product to Spain or Italy. The EU reported imports of 113 tons of swordfish from the Côte d'Ivoire in 1994 and one ton in 1995. Some product is marketed in the Côte d'Ivoire as frozen or chilled product or as smoked fish, which is a luxury item in the Côte d'Ivoire.

Companies

There is no information about the companies that deal with swordfish in the Côte d'Ivoire.

Trade

Swordfish is seasonally available from artisanal fishermen in the port area of Abidjan.[58]

A. Imports

The Ivorians apparently are one of the few West African nations to import fishery products, including smoked swordfish, a luxury product that is prepared in Senegal.[59] In 1988, the Côte d'Ivoire imported 140,428 tons of fish. Swordfish was not identified as a specific import product.[60]

B. Exports

The port of Abidjan is a major landing point for tuna being unloaded by fleets of foreign tuna vessels operating in the Gulf of Guinea. Tuna accounts for the overwhelming majority of the Côte d'Ivoire's exports.

The Côte d'Ivoire ships limited quantities of swordfish to the EU. In 1992, two tons of fresh swordfish were sent to the EU and in 1994, 108 tons of frozen, whole swordfish and five tons of frozen swordfish fillets were exported to the EU from the Côte d'Ivoire for a total of 113 tons.

Exports, however, declined to only one ton in 1995.

The Côte d'Ivoire exported 1.3 tons of swordfish to the United States in 1986; no other exports have been recorded by U.S. import statistics.

International relations/joint ventures

A. International relations

The Côte d'Ivoire is important to the fishery interests of the EU. Several EU tuna seiners operate out of Abidjan and substantial quantities of tuna are landed there for processing by canneries operated by EU interests. The EU and the Côte d'Ivoire reached a fisheries agreement in August 1990, which permitted 54 tuna seiners and 35 pole-and-line tuna boats or longliners as well as an unspecified number of freezer-trawlers to fish in Ivorian waters. The EU and the Côte d'Ivoire extended the agreement until January 1994. The EU agreed to pay $36 million for the right to fish, including payments for scientific research, stock studies, training of fishermen, and other studies.[61] The extended agreement allows 89 tuna vessels to fish in Ivorian waters. There are no provisions in the agreement that specifically permit EU-flag vessels to harvest swordfish in Ivorian waters. It is assumed, however, that some swordfish are caught and shipped to European markets as incidental catches.

The Côte d'Ivoire is a member of ICCAT. As a member nation, the Côte d'Ivoire is expected to follow ICCAT rules and regulations and to participate in the management programs adopted by that body.

B. Joint ventures

Numerous longlines can be seen in coastal waters in the Côte d'Ivoire and longliners are frequently observed unloading their catch of tuna. There are five canneries that process tuna and French and Spanish fishermen frequently land their catch of albacore, little tunny, skipjack and yellowfin, and bycatch of bonitos, and sometimes blue marlin. There are also many older Japanese and Republic of Korea longline vessels at the port of Abidjan. Inquiries made by the U.S. Embassy as to whether any of these vessels landed swordfish "consistently rendered shrugs and silence."[62] The Embassy's reporting officer was unable to obtain statistical data concerning landings of swordfish.[63]

Future trends

The Côte d'Ivoire could launch a major effort to harvest swordfish in the Gulf of Guinea in competition with Spanish fishing fleets, but has not done so to date. This would, obviously, require Ivorians to invest in tuna longliners (they already own tuna purse seiners). They do, however, have the knowledge and infrastructure to undertake this type of project. However, at the present time there is no indication that the Ivorians plan to expand their harvests of swordfish in the next few years.

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Table 1. CÔTE D'IVOIRE--Total landings of swordfish in the South Atlantic, 1965-95.

Year	Landings	Year	Landings
	Metric Tons		*Metric Tons*
1965	0	1982	0
1966	0	1982	0
1967	0	1983	0
1968	0	1986	19
1969	0	1985	15
1970	0	1986	15
1977	0	1987	19
1977	0	1988	12
1973	0	1989	0
1977	0	1990	10
1975	0	1991	21
1970	0	1992	15
1977	0	1993	19
1978	0	1994	24
1979	0	1995	24
1980	0	1996	n.a.

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996.

TABLE 2.CÔTE D'IVOIRE--
Landings of swordfish, 1984-94.

Year	Landings
	Kilograms
1984	10,000
1985	10,000
1986	10,000
1987	10,000
1988	12,688
1989	6,747
1990	9,583
1991	21
1992	15,434
1993	18,868
1994	22,600

ICCAT, *Statistical Bulletin, 1993,* Vol. 24, Madrid, Spain, 1994, p. 103 (1983-1986) and T. Joanny, J.B. Amon Kothias, and F.X. Bard, "Standardized Indices of Abundance, 1988-1994, for Billfish (Sailfish, Blue Marlin) and Swordfish (*X. Gladius*) off Côte d'Ivoire," ICCAT, *Collective Volume of Scientific Papers,* Vol. XLIV (3), ICCAT, Madrid, Spain, 1995, p. 32 (1988-1994).

1.4

GHANA

Ghana's artisanal canoe fleet uses drift gillnets to catch swordfish at night along the edge of the Continental Shelf which is fairly close to shore. This artisanal fishery reportedly caught 235 tons of swordfish in 1993. This is a small portion of the harvest of large pelagics, which included 22,600 tons of skipjack tuna. The FAO reports Ghanaian fishermen caught 103 tons of swordfish in 1995. Ghana is a member of ICCAT. The EU reported importing three tons of swordfish from Ghana in 1995.

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Fishing grounds

Ghana is situated in the Western Gulf of Guinea between the Côte d'Ivoire and Togo. The Continental Shelf off Ghana is fairly narrow, ranging from about 35 km off Cape Three Points to about 80 km off Takoradi.[64] The Shelf narrows to about 24 km off Tema, Ghana's most important fishing port. The artisanal drift gillnetters operate near Ghana's Continental Shelf where large pelagics are found feeding at night.[65] The artisanal vessels that target swordfishes operate from four main beaches along the 536-km coast.[66] Ghana's total shelf area (to 200 miles) is approximately 21,000 km^2.[67]

Fleet

The Ghanaian artisanal fleet consists of around 8,000 small, wooden, artisanal canoes equipped with outboard motors. These wooden canoe fishermen account for about 70 percent of Ghana's total harvest of fish.[68] Many of these canoes were designed to fish close to shore, but in the 1980s Ghanaian fishermen began buying new, large "ali" canoes able to fish further offshore. There were approximately 3,000 to 3,400 ali canoes in the Ghanaian fleet in the mid-1980s.[69] It was important that Ghanaian fishermen be able to reach the Continental Shelf area because that is where many large pelagic fish could be found.

Ghana also has been interested in tuna fishing since 1959 when Star-Kist Foods, Inc., of the United States sent the tuna clipper *Colombia* to conduct a survey of fishery resources off the coast of Ghana. That survey confirmed that there are good offshore stocks of yellowfin and other tunas in the Gulf of Guinea. These tunas are harvested by Ghanaian vessels and by purse seiners and longliners from many countries. Some of these vessels, however, may not report their incidental catches of swordfish to Ghanaian authorities and may land their swordfish in other ports, such as Abidjan in the Côte d'Ivoire or the Canary Islands, Spain.

Shipyards

The Tema Shipyard and Drydocks Corporation handles any required repairs to large steel vessels. These vessels include Ghanaian-flag vessels as well as foreign vessels visiting Tema. There are also many small shops in smaller ports and along the beach that produce wooden canoes for commercial fishermen. Construction of wooden canoes is an activity that is passed on from generation to generation.

Fleet operations and gear

Traditional canoe fishermen use canoes that are hollowed out from a single tree. Those fishing for tuna average about eight m in length and can hold five fishermen. They come equipped with an outboard motor that can take them from shore out to the edge of the Continental Shelf within a few hours.[70]

Ghanaian fishermen began catching large pelagic fish using large mesh nets (called *anifa-anifa*) in 1974. The net apparently is set at night and is allowed to drift near the edge of the Continental Shelf. Large pelagic fish, such as tunas, sharks, and swordfish are caught as they come to feed near the surface. Ghanaian fishermen developed the net in response to lower prices for smaller pelagics in 1972. The net ranged from 90 m to 360 m in length and from nine m to 18 m in depth.[71]

Catch

Ghanaian fishermen generally fish for anchovies and sardines and their total catches have ranged between 360,000 tons and 427,000 tons in the past few years. Ghana's 1993 catch totaled 371,000 tons, which included 92,700 tons of round sardinella (*Sardinella aurita*) and 81,000 tons of European anchovy.

Ghanaian authorities reported that artisanal fishermen caught 100 tons of swordfish in 1967 and 200 tons in 1968. No further catches were reported until 1980 when 110 tons were caught. The swordfish harvest then decreased to five tons in 1981 and gradually increased to 235 tons in 1988. The catch was reported at 235 tons during the years 1988 to 1992 and 103 tons of swordfish in 1995.[72] Ghanian authorities report that there are no harvests of swordfish made by baitboats or by Ghana's semi-industrial fleet.[73]

Ports

Landings of tuna and other fish caught by larger vessels are made at the ports of Tema, Takoradi, and Elima.[74] Port facilities can also be found at Ada, Accra, Apeam, Axim, Montford, Sekondi, and Winneba. There is, however, a total of about 180 fishing villages and 222 landing beaches where fish is brought ashore in Ghana.[75] Swordfish can be landed at any of these ports, but if the fish is destined for export markets then the product generally must be landed (or taken) to Tema, Takoradi, or Elima.

Transshipments

The port of Tema is an important transshipment point for frozen tuna being shipped to distant markets. Significant quantities of frozen tuna, for example, are shipped to Puerto Rican tuna canneries from the port of Tema.[76] Some Ghanaian artisanal and joint venture tuna fishermen also land their catches at the port of Abidjan which has cold storage facilities. Abidjan is an important transhipping point for tuna fleets operating in the Gulf of Guinea. Frequent service by refrigerated cargo ships (reefers) to France, Spain, Italy, Japan, or the United States can easily be arranged by freight forwarders.

Processing and products

Swordfish caught by Ghanaian fishermen are usually gilled or gilled-and-gutted for delivery to cold storage facilities. The fish are usually landed fresh each morning.

Companies

There are several important seafood processors in Ghana. The State-owned Tema Food Complex Corporation operates a cannery for herring and tuna destined for local consumption. Mankoadze Fisheries and Food Cannery Ltd. both have a tuna canning line.[77]

Other fishery joint ventures have included Nichiro Fisheries of Japan and several tuna companies from the Republic of Korea.[78]

Markets

A. Domestic

Much of the fish that is landed along isolated beaches is sold to women who smoke the fish for sale in local villages. It is estimated that 75 percent of all fish consumed in Ghana are smoked in traditional ovens.[79]

B. Trade

1) Exports

Ghana exported 303,000 tons of fish and shellfish in 1988, including less than 30,000 tons of tuna.[80] No information was available about exports of the 235 tons of swordfish reportedly harvested in 1988.

The EU is a market for Ghanaian swordfish. EU import statistics show that Ghana exports of frozen swordfish have gone from 29 tons in 1991 to 40 tons for the years 1992-93 and down to six tons for 1994 and only three tons in 1995.

Ghana exported one ton of swordfish to the United States in 1987.

2) Imports

Ghana imports fish to meet local demand for seafood. However, swordfish is not thought to be included in Ghanaian imports.

International relations/joint ventures

A. Multilateral relations

Ghana is a member of ICCAT.

B. Joint ventures

Ghana has undertaken joint venture tuna fishing ventures with a number of companies, including a venture with Star-Kist. These operations, however, do not target swordfish. Star-Kist's investment included an involvement with Pioneer Tuna Fishing Company, Pioneer Food Cannery, and Mankoadze Fisheries. Some of the tunas caught by the joint venture's Ghanaian-flag vessels were landed in Abidjan for processing by Star-Kist's cannery in the Côte d'Ivoire.[81]

Future trends

Ghana is not expected to significantly increase the size of its artisanal canoe fishery for swordfish. Catches will depend on market demand, the availability of swordfish, and relevent ICCAT recommendations. Through 1996, Ghana will be required to abide by a 250-ton limit on the catch of swordfish in the South Atlantic for small-scale fishing nations.

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Table 1.--GHANA. Landings of swordfish by artisanal fishermen, 1968-1995.

Year	Landings	Year	Landings
	Metric Tons		*Metric Tons*
1969	100	1982	55
1969	200	1983	5
1970	0	1984	15
1978	0	1985	15
1978	0	1986	13
1970	0	1982	123
1970	0	1982	235
1970	0	1989	235
1970	0	1990	235
1970	0	1991	235
1978	0	1990	235
1970	0	1993	$
1980	110	1994	$
1981	5	1995	103

Source: ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1995, and FAO, unpublished report (for 1995).

1.5

NAMIBIA

Namibia has access to some of the wealthiest fishing grounds in the world, containing enormous quantities of hake, horse mackerel, pilchards, rock lobster, and crab. These resources attracted foreign fleets and during the peak of foreign fishing, 815,000 tons of hakes alone were harvested off the coast of Namibia prior to independence on March 21, 1990. Namibian fishermen reported a harvest of nearly 330,000 tons in 1993, but no landings of swordfish. However, the EU reported importing 14 tons of frozen swordfish from Namibia for the first time in 1993, 668 tons of frozen swordfish in 1994, and 182 tons of frozen swordfish in 1995.

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Fishing grounds

Namibia is located in Southern Africa, between Angola to the north and South Africa to the south. Namibia has a 1,572 km coastline, a 12-nautical mile territorial sea, and a 200-mile EEZ. Namibia's Continental Shelf area out to 200 m includes an area of 110,000 km^2. The Republic of Namibia gained national independence on March 21, 1990, and took immediate action to protect its fishery resources, both by excluding foreign vessels and by imposing tough quota regimes.

Cold, nutrient-rich waters from the Antarctic are carried up along the coast of Namibia by the Benguela currents where they combine with upwellings to produce ideal conditions for marine life. The favorable conditions are ideal for Cape horse mackerel (*Trachurus trachurus capensis*), Southern African pilchard (*Sardinops oceltata*), Southern African anchovy (*Engraulis capensis*), Cape hakes (*Merluccius paradoxis*, *M. polli* and *M. capensis*), monkfish (*Lophius*), and kingklip (*Genypterus capensis*), as well as Cape rock lobster (*Jasus lalandii*). Namibia's tough management policy allowed fishery resources time to rebuild and stocks began to recover at a tremendous

rate.[82] Oceanic conditions, however, changed and a "red tide" bloomed along the Namibian coast in late May 1994. The result was extensive loss of marine resources (fish, shellfish, and marine mammals). Schools of pelagic fish, including the valuable pilchard stock, migrated offshore. As a result, Government-imposed quotas for 1995 were 90,000 tons lower than in 1994.[83] Unfortunately, there are indications that poor conditions and lower recruitment could affect the 1996 fishing season.[84]

Fleet

Unlike most African nations, there is no artisanal fishery in Namibia. All 261 vessels registered in the country in 1991 consisted of large, steel-hulled, industrial or commercial fishing vessels.[85]

A. Domestic

In 1991, there were 152 Namibian-flag vessels registered in the country. This included 46 stern trawlers, 41 lobster boats, 38 purse seiners (pelagic species), 14 line fish vessels,[86] 11 longliners, and two pole-and-line tuna boats.[87]

B. Foreign

In addition, there were 109 foreign flag vessels operating in Namibia's waters, including 78 midwater trawlers (fishing for horse mackerel), 26 stern trawlers and five crab boats.[88]

Namibia assigns fees for vessels seeking to fish for tuna in Namibia's waters. A premium fee ($676 per ton) was required for vessels fishing for *sashimi*-grade tuna beginning in 1991. A declining fee structure followed: foreign vessels fishing for lesser quality tuna ($113/ton); joint venture tuna fishing ($85/ton) and tuna fishing by Namibian vessels ($56/ton)[89]. There was a rebate of $28/ton if the tuna was landed for processing ashore. United Fishing Enterprises and Gendev are operating two tuna canneries at Walvis Bay.[90]

Shipyards

There are fairly sophisticated shipyards able to undertake work on very large, modern fishing vessels in Walvis Bay and Lüderitz.

Fleet operations and gear

Namibia's fleet includes 11 longliners and two pole-and-line tuna boats.[91] The 11 longliners are able to catch swordfish and other species in association with their fishery for tuna.

Catch

A. General

Namibia's catch has gone from 262,432 tons in 1992 to 329,790 tons in 1993. Namibia's 1993 fisheries catch included Southern African pilchards (114,812 tons), Cape horse mackerel (73,520 tons), Cape hakes (64,885 tons), Southern African anchovy (63,074 tons), and Cape monkfish (9,234 tons).[92]

B. Tuna

Namibia's harvest of tuna has increased from 216 tons in 1991 to 2,000 tons in 1993, and is growing.[93] The Namibians are planning to export the tuna in fresh or frozen form, although canneries are available for this product. Namibia's waters include albacore, bigeye, skipjack, southern bluefin tuna, and yellowfin tuna.[94] Thirty-one companies are registered in the *South African Fishing Industry Handbook and Buyer's Guide, incorporating Namibia, 1993*, as able to supply tuna.

C. Swordfish

Namibia did not report harvesting any swordfish for the years 1988-95. The EU reported importing 14 tons of swordfish from Namibia in 1993, 668 tons in 1994, and 182 tons of swordfish in 1995.

It is likely that these exports are transshipments of swordfish from European- or Asian-flag longliners. There are 11 longliners flying the Namibian flag that could be catching swordfish incidentally to their tuna fishing operations. It would only require each of these vessels to catch 61 tons annually to generate 668 tons. There are no companies listed in *South African Fishing Industry Handbook and Buyer's Guide, incorporating Namibia, 1993*, as supplying swordfish.

Ports

The Namib Desert extends right down to the coast

and offers no facilities for fishermen. There are two major fishing ports in Namibia along its extensive coastline: Lüderitz and Walvis Bay. Walvis Bay, which was under joint administration with South Africa until February 28, 1994,[95] has excellent facilities to service a large industrial fishing fleet. It is also the only highseas port where all of the pilchard catch is landed and where most hake landings take place. Swakopmund is a small coastal community just north of Walvis Bay.

Transshipments

Although Namibia has 11 longliners able to catch swordfish, some or all of the frozen swordfish imported by the EU from Namibia includes transshipments, possibly from Spanish or Asian-flag longliners fishing beyond Namibia's 200-mile EEZ and unloading their catch for transport to distant markets. The author has no information to support this theory.

Processing and products

Small pelagic fish are landed at Walvis Bay. There are three canneries with fishmeal reduction facilities. Two additional fishmeal plants also exist, but without canning lines. Fish can be frozen whole onboard most vessels or delivered on ice to plants at Walvis Bay or Lüderitz where the fish can be headed-and-gutted (H&G) or filleted. The Spanish firm Pescanova has invested heavily in a 40,000-ton capacity processing plant at Lüderitz Bay to process hakes for the international market.[96] Companies in Namibia can also produce shatter-packed fillets, skinned- and deep-skinned, boneless, block-frozen fillets, loins, fish sausage, and even fish roes.[97]

Companies

No information is available about Namibian companies handling swordfish. However, several companies fish for tuna and it is likely that they can also handle swordfish. There were 14 companies registered as "holders of Namibian tuna exploitation rights" in 1993 (those identified in bold also have vessels registered with the company):

African American Trading Co. (Pty) Ltd.
Agatha Fishing
Atlantic Fishing Enterprises
Eros Fishing Co. (Pty) Ltd.
Co-Operation Association
Inter Namibia Enterprises
Khoi-Khoi Enterprises
Luderitz Smokeries
Marine Corp (Namibia) (Pty) Ltd.
Namibian Marine Products
Omega Investment Group
Prestige Fishing Co. (Pty) Ltd.
SA Tuna Association
Saddle Namibian Fishing Corp. Ltd.

Atlantic Harvesters, Belinda Fishing, Gendev, Kotzee JJJ, and Namibia Seafood Ind. also have vessels registered in Namibia (see table 1). Tunacor is also believed to be involved in fishing for tuna. It is interesting to note that Pescanova Fishing Industries of Namibia (Pty) Ltd., one of Spain's most important fishing companies, is not listed as dealing with tuna, although Pescanova would be particularly adept at dealing with large shipments of tuna or swordfish destined for the EU market.

Trade

A. Imports

Import statististics do not indicate that Namibia imports swordfish.

B. Exports

1) General

Namibia, with a small population (1.7 million in 1995) and a national product per capita of $3,500 (1994), exports nearly 100 percent of its production, mostly as canned pilchards, H&G, frozen hake or frozen hake fillets, frozen horse mackerel, and lobsters.[98] In recent years, small quantities of monkfish, tuna, kingklip, shark, and other products have been air freighted to European markets.[99]

1) Swordfish

The EU reported imports of 14 tons of frozen swordfish for the first time from Namibia in 1993. EU imports jumped significantly to 668 tons of frozen swordfish originating from Namibia in 1994 before declining to 182 tons in 1995.[100]

Federation of Japan Tuna Fisheries

International relations/joint ventures

A. International relations

Prior to independence on March 21, 1990, South Africa administered Namibia under a UN mandate, but the U.N. terminated that mandate in 1966. While South Africa continued to administer Namibia, it declined to extend a 200-mile zone for Namibia.[101] The International Commission for Southeast Atlantic Fisheries (ICSEAF) established quotas for fleets of foreign countries. Principal fishing nations in the region included Bulgaria, Cuba, Iraq, Israel, Japan, Poland, Romania, South Africa, Spain, and the Soviet Union. According to Namibian Fisheries Permanent Secretary Calle Schlettwein, there were some 300 foreign boats working Namibian waters before independence.

Following independence, Namibia established a 200-mile EEZ and imposed tough restrictions on fishing in its waters. Vessels that had fished Namibia's waters for years were excluded from these rich grounds as Namibia aggressively patrolled its new EEZ. This led to confrontations with many nations, especially Spain, which caught large quantities of Cape hakes, a species prized by Spanish consumers. Spanish vessels began fishing off the coast of Namibia in 1962, when Pescanova's *Andrade* was first deployed. There were 202 Spanish vessels fishing off the Namibian coast harvesting 260,000 tons of hake, with a value of more than $86 million when independence was declared.[102]

Namibia immediately acted to exclude all foreign fishing off its coast when independence was declared. This action was designed to give heavily-fished stocks a chance to recover and allow local authorities time to install their own programs and goals. Namibian authorities began to patrol their waters aggressively for violators.[103] Unfortunately, some Spanish vessel owners continued to fish illegally in Namibian waters, which quickly led to confrontations. Five Spanish vessels were seized and the captains ordered to pay $71,000 each in fines or to serve two years in prison. Eight remaining officers were sentenced to pay $7,100 or spend six months in jail.[104] As a result of these and subsequent arrests, negotiations with the EU broke off in the face of continued illegal fishing. Negotiations with Namibian and EU officials resumed on April 25-27, 1994, which focused on direct contacts between EU businessmen and Namibian firms.[105] No new agreements have been reached through early 1996.

B. Joint ventures

The Government of Namibia is pushing for the "Namibianization" of the fishing industry. However, the Ministry of Fisheries and Marine Resources intends to base its fisheries relations with foreign concerns on mutually-beneficial commercial joint ventures.[106]

Future trends

Namibia has the capacity to catch reasonably large quantities of swordfish for delivery to onshore processing facilities (such as the Pescanova processing plant) or for export to overseas markets as frozen product. Alternatively, Namibia has the capacity to serve as a transshipment point for Spanish or Asian-flag longliners operating in the South Atlantic. Spain reported catching 7,937 tons of swordfish in the South Atlantic in 1994 and it would not be unusual if some of this swordfish were shipped to EU markets through Namibian ports. However, this is speculation and will not be resolved until Namibian catch statistics for 1994 are made available.

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Table 1. NAMIBIA. Tuna fishing fleet, by vessel name, owner, tonnage, and vessel type, 1993.

Name	Owner	Tonnage	Type
Atlantic Fisherman	Belinda Fishing	99	Line/longline
Atlantic Leader	Atlantic Harvesters	322	Pelagic purse seine
Brandis	Saddle Hill Fishing	97	Longline
Cecil G. White	Marine Corp of Namibia	99	Longline
Christo Rei	African American Trading	255	Longline
Intersea 21	Khoi-Khoi Ent	125	Longline
Intersea 22	Namibia Seafood Ind.	135	Longline
Meob Bay	Namibia Seafood Ind.	20	Combination longline
Ruwekus	Gendev	316	Pelagic purse seine
Senhor do Mundo	Kotzee JJJ	46	Line/longline
Skipper Hansen	Prestige Fishing	77	Longline
St. Poroto I.	Luderitz Smokeries	214	Longline
Vondeling	Marine Corp of Namibia	91	Longline

Source: Michael Stuttaford, Editor, *South African Fishing Industry Handbook and Buyer's Guide, incorporating Namibia, 1993*, 21st Edition, Stellenbosch, South Africa, 1993, pp. 250-256.

1.6

NIGERIA

Nigeria is a large West African country with ample fishery resources and the potential to fish for tuna and swordfish in the Gulf of Guinea. However, Nigeria reported harvesting three tons of swordfish in 1992. The FAO reports that Nigerian fishermen caught 857 tons of swordfish in 1994, but no swordfish in 1995. The EU reports no imports of swordfish from Nigeria.

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Fishing grounds

Nigeria has a coastline of 853 km between Bénin to the north and the Cameroon to the south. Nigeria's 200 nautical-mile EEZ covers 192,000 km^2. Nigeria has a narrow Continental Shelf.

Fleet

The artisanal fishing industry accounts for about 80 percent of Nigeria's total catch.[107] Nigeria's fishing fleet included 16,024 canoes powered by outboard engines and 61,131 unpowered vessels in 1989. In addition, there were 158 inshore trawlers and 282 shrimp trawlers operating inside Nigeria's EEZ. Finally, there were 109 distant-water vessels flying the Nigerian flag in 1989.[108]

Shipyards

Nigeria has no significant shipbuilding industry. In 1991 and 1992, shipbuilding and repair equipment were the second largest U.S. exports to Nigeria. Most of the newer commercial shrimp trawlers operating in Nigeria are built in the United States and the industry seems predisposed toward American products.[109]

Fleet operations and gear

Information on Nigeria's swordfish fishery is scant. It is thought that swordfish are caught in fisheries targeting sharks, rays, and skates. Nigeria's harvest of these species was 8,900 tons in 1992, which is enough to generate a bycatch of three tons of swordfish. It is believed that most of this catch was made by the artisanal fishing fleet or by small, coastal vessels operating along Nigeria's narrow Continental Shelf.

Ports

The principal ports in Nigeria include Calabar, Lagos, Onne, Port Harcourt, Sapele, and Warri.

Catch

A. General

Nigeria's catch has fluctuated from 279,000 tons in 1988 to 255,000 tons in 1993. Varying catches of Bonga shad, clupeoids, and unspecified marine fish account for these fluctuations in yearly harvests. Shrimp fishing is a lucrative business that generates significant export earnings for Nigeria, accounting for 97 percent of total Nigerian fish exports in 1989.[110]

B. Swordfish

Nigerian fishermen caught 83 tons of swordfish in 1983 and 69 tons of swordfish in 1984. There were no other reports of landings until 1992 when three tons of swordfish were reportedly caught by Nigerian fishermen, likely as bycatch. The FAO, in an unpublished report, lists Nigeria's catch of swordfish as 857 tons in 1994, but no catches were reported for 1995. This information is at odds with the International Commission for the Conservation for Atlantic Tunas which does not show any harvests of swordfish by Nigeria for 1994.

Transshipments

There is no information suggesting that Nigeria transships swordfish through its ports.

Processing and products

The few swordfishes that are caught probably are sold as smoked or sun-dried pieces of fish, as is the custom in many West African countries. Some minor quantities might also be sold as fresh fish in local markets to foreign expatriates or to restaurants or hotels catering to foreign visitors.

Companies

The Nigerian commercial fishing sector is dominated by five large companies. The five firms own approximately 60 percent of the majority shares of all other companies which own fewer than five trawlers each. Most companies are located in Lagos, but several operate from Port Harcourt, Warri, and Calabar.[111]

Trade

Nigeria's fisheries production over the years has been inadequate to meet demand of the 101 million population and so imports of fishery products have been necessary. Inexpensive frozen fish, dried-salted fish, and canned fish are the most important products imported by Nigeria.

A. Imports

Nigeria imported $154 million worth of fishery products in 1983, mostly fresh or frozen fish products.[112] This is consistent with trade patterns in previous years when Nigeria imported significant quantities of fish in response to demand.

B. Exports

Nigerian exports of fishery products have ranged from $14 million in 1990 to $31 million in 1983 and consist and mostly of shrimp products.[113] There are no reports of exports of swordfish to either the EU nor to the United States.

International relations/joint ventures

A. International relations

Nigeria is a member of the Commission for the Eastern Central Atlantic Fisheries (CECAF). Nigeria also has fishing agreements with three African countries, Equatorial Guinea, Angola, and Sierra Leone, which allow Nigerian vessels to register to fish in the participating country's national waters.[114]

Equatorial Guinea: A five-year agreement, renewed with Equatorial Guinea in 1991 allows 17 Nigerian trawlers to fish in its waters in exchange for 50 tons of fish per year per vessel given to the Equatorial Guinean government. The Government of Equatorial Guinea negotiated this requirement to provide fish for its local market, as it does not have an offshore fishing industry of its own.[115]

Sierra Leone: Nigeria's agreement with Sierra Leone, allowing for 12 Nigerian vessels to fish the Sierra Leonean waters is a reciprocal agreement though Sierra Leone is not currently exercising its right to fish in Nigerian waters.[116]

Angola: Nigeria's 1989 agreement with Angola allows the licensing of four Nigerian vessels with a minimum length of 50 m. This requirement virtually nullifies the agreement since Nigeria does not currently operate trawlers of this size.[117]

Nigerian vessels are currently fishing only in Equatorial Guinea's waters and in local waters. Federal Department of Fisheries (FDF) officials say that no negotiations over reciprocal fishing agreements have taken place with any of the major fishing powers (i.e., Japan, Russia, Norway, or the EU).[118]

B. Joint ventures

Fishing in territorial waters is reserved for Nigerian-flag vessels.

Future trends

Nigeria's goal is to become self-sufficient in fisheries in the coming years. This effort is aimed at meeting local demand for inexpensive species of fish, such as horse mackerel and other mackerels that can be used to replace imported fish. It is not expected that Nigeria will focus on developing a fishery for swordfish, even though swordfish can be found in the Gulf of Guinea. It is more likely that Nigeria would first seek to establish a tuna fishery utilizing a swordfish bycatch destined for export markets.

The FAO report listing a catch of 857 tons of swordfish for Nigeria in 1994, however, could alter this prediction. Obviously, 857 tons is a significant quantity and cannot be overlooked. If correct, then Nigeria has become a key player in the South Atlantic swordfish fisheries. It is also possible that these may be transshipments made by foreign flag vessels. The author simply does not have the information needed to make a definitive statement.

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Table 1.--NIGERIA. Estimated number of fishing vessels registered or operating in Nigerian waters, 1987-90.

Year	Inshore trawlers			High-seas	Artisanal canoes
	Inshore	Shrimp	Total		
	Number of vessels				
1987	170	82	252	97	76,644
1988	210	162	372	129	77,144
1989	158	282	440	109	77,155
1990	317	n.a.	317	28	77,000

Source: Federal Department of Fisheries, Lagos 1990. (E) = Estimate.

1.7

SAINT HELENA

Saint Helena is known as Napoleon Bonaparte's place of exile and as a refueling port for the Royal Navy and merchant ships sailing around the Cape of Good Hope. Fishing is an important part of the local economy. Saint Helenians do not report landing swordfish, but the EU reported that Saint Helena shipped one ton of frozen swordfish fillets to the EU in 1993.

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Fishing grounds

Saint Helena is a dependent territory of the United Kingdom located in the South Atlantic Ocean, west of Angola about two-thirds of the way from South America to Africa. This island is about twice the size of Washington, D.C. and has a coastline of 60 km. Saint Helena claims a 200-nautical-mile EEZ and a 12-nautical-mile territorial sea.

Fleet

No information is available about the fishing fleet that operates out of Saint Helena.

Fleet operations and gear

No information is available about the fishing operations and gear used by fishermen in Saint Helena.

Catch

A. General

Fishing is the main industry in Saint Helena.[119] The catch has ranged from a high of 1,013 tons in 1989 to a low of 626 tons in 1991. The average catch is around 700 tons. In 1993, Saint Helena reported a catch of 726 tons, including 362 tons of Tristan da Cunha rock lobster and 171 tons of yellowfin tuna. Local fishermen also report catching lesser quantities of wahoo, skipjack tuna, albacore, bigeye, and chub mackerel.[120]

B. Swordfish

It is likely that small quantities of swordfish are being caught in the tuna fishery as part of an incidental catch.[121]

Ports

The two main ports in Saint Helena are Georgetown and Jamestown.

Transshipments

The United Kingdom maintains freighter service between Cardiff in the UK and Jamestown, Saint Helena. The Mail Ship *St. Helena*, a 6,700-ton freighter, operates this service and likely brings some frozen fish products to markets in the UK during its run to the South Atlantic.[122]

Processing and products

Saint Helena has the capacity to produce frozen swordfish fillets, in addition to providing local inhabitants with fresh fish. Some of these frozen fillets were exported to the EU in 1993.

Companies

No information is available about companies dealing with swordfish in Saint Helena.

Trade

A. Imports

Saint Helena is not believed to import any swordfish.

B. Exports

In 1993, Saint Helena shipped one ton of frozen swordfish fillets to the EU.[123]

Future trends

Saint Helena is not expected to become a swordfish harvesting nation in the near future. Small quantities of incidental catches might take place on an infrequent basis, but increases are not anticipated in the next few years.

SOURCES

EUROSTAT data.

FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993*, Volume 76, Rome, 1995.

Gollan, David, "Slow Boat to the South Atlantic," *The Washington Post,* February 4, 1996.

1.8

SOUTH AFRICA

South Africa does not have a directed commercial fishery for swordfish (also called *swaardvis* in Afrikaans), but does catch small quantities of swordfish incidentally in other fisheries and does have a small recreational fishery for swordfish which began in 1986. The FAO reports that South African fishermen harvested 2 tons of swordfish in 1995. South Africa does permit a fleet of 90 Japanese longliners to take swordfish in its waters as incidental catch and this fleet reported a catch of 680 tons in 1994. The EU reported importing 1,101 tons of swordfish from South Africa in 1994 and 682 tons of frozen swordfish in 1995, making it one of the largest exporters of swordfish on the African Continent. The United States imported 22 tons of swordfish from South Africa in 1994 and 159 tons in 1995. South Africa is a member of ICCAT.

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Fishing grounds

The South African coastline stretches for 2,798 km. A small recreational fishery caught one ton of swordfish off Cape Point in 1994.[124] A fleet of 90 Japanese longliners caught 680 tons of swordfish off Cape Agulhas in 1994.

Fleet

The South African commercial fishing fleet does not target swordfish. There are recreational vessels that do fish for swordfish. No information is available on the size of South Africa's recreational fishing fleet.

Fleet operations and gear

Small quantities of swordfish are caught incidentally in trawl gear and in the longline fishery for hake and kingklip. The recreational fishery uses rods and reels to catch swordfish.

Catch

South Africa reported harvesting swordfish in 1979. In the following years, modest quantities (never exceeding 31 tons) were reported as incidental catch in various trawl fisheries. In 1986, recreational fishermen began fishing for swordfish off Cape Point. Swordfish were de-commercialized in 1989 after pressure was exerted by the South African Deep Sea Angling Association. South African landings of swordfish declined to three tons caught by trawl fishermen and one ton harvested by recreational fishermen off Cape Point in 1994.[125] Two swordfish were tagged and released by sports fishermen off Cape Point and Sodwana in 1995. The FAO, in an unpublished statistical paper, reports that South African fishermen caught two tons of swordfish in 1995.

South African authorities reported that 90 Japanese longliners caught 680 tons of swordfish in South African waters in 1994. This catch was supposed to have been incidental bycatch only. In 1994, the swordfish catch by the Japanese fleet amounted to 13.75 percent of their total catch of tunas and other billfish. In 1996, the Japanese fleet was granted a bycatch quota of 600 tons.[126] In addition, 30 Taiwanese longliners operated in this zone, but reported catching no swordfish. These vessels operated south of Cape Agulhas to the east of the ICCAT convention area and are fishing with the permission of the Government of South Africa.[127]

Ports

Swordfish caught by foreign-flag longliners can be landed at Cape Town or Hout Bay. Recreational vessels have landed swordfish at Saldahna Bay, Hout Bay, Bordons Bay and Port Elizabeth Harbor, as well as on the beach at Sodwana Bay in Northern Zululand.[128]

Transshipments

It is believed that large shipments of swordfish are being transshipped through the port of Cape Town by the fleet of 90 Japanese vessels fishing off South Africa's southern coast. These vessels visit Cape Town to resupply and take on fuel and it is thought that they unload their catch for shipment to Japan and other export markets. South Africa listed "exports" of 1,101 tons of swordfish in 1994, when landings consisted of only one ton. The growing volume of exports from South Africa represents transshipments from these Asian-flag vessels, although documentation to support this claim is lacking.

Processing and products

Swordfish caught incidentally by trawl fishermen are likely gilled or gilled-and-gutted and then frozen for delivery when the vessel returns to port. Any fish caught by recreational fishermen are landed fresh. These fish cannot be sold without a special permit granted by the Chief Director of Sea Fisheries. However, recreational anglers who do land their fish can give away fillets to friends and family. Swordfish meat is frequently donated to fishing clubs for use at a barbecue or similar club function. Swordfish is highly prized in South Africa.

Companies

There is no information about any firms dealing with swordfish in South Africa.

Recreational associations

South Africa has several recreational associations involved in swordfish. The South African Deep Sea Angling Association was responsible for de-commercializing swordfish in 1989. The Western Province Deep Sea Angling Association instituted a voluntary "Broadbill Protection Plan" to avoid over-exploitation. The Plan allowed members to keep only one swordfish in their lifetime. All other swordfish were to be tagged and released unless it was believed to be a record-class fish. After a number of years, the Plan was amended to allow members to keep one swordfish per year. The Plan is entirely voluntary.[129]

The Broadbill Foundation was established on March 16, 1995, in Cape Town, South Africa.[130] The aims and objectives of the Foundation, as listed in its Constitution, are as follows:

- To promote and provide the effective control and management of the Broadbill Swordfish and to safeguard the species from over-exploitation.
- To liaise and advise at all levels of government on procedures of control in the management of Broadbill Swordfish resources.

- To encourage release and/or tag & release amongst sport anglers.
- To maintain a comprehensive register on all Broadbill Swordfish caught and/or released on rod and reel in our waters.
- To promote and foster sound resource management philosophies amongst all interest parties both nationally & internationally and to encourage active participation by concerned individuals, groups and organizations in the promotion thereof.
- To undertake and/or support, where relevant or necessary, scientific and economic research studies to determine the economic and/or scientific impact of various user groups.
- To assist and advise groups or organizations in the planning and formulation of tournament rules related to the species and to promote sound sport angling ethics in keeping with those of the International Game Fish Association.
- To affiliate to, liaise and share knowledge with other organizations, as decided, who have similar aims and objectives to the Foundation

The Foundation is attempting to work with the government of South Africa to better understand the impact of foreign fishing for swordfish. The Foundation believes that South African fishermen should derive income from the resource and that management measures should be taken to prevent overfishing by foreign fleets. This is an ongoing issue and results of these discussions are not available.[131]

Markets

A. Domestic

It appears that swordfish is appreciated in South Africa since reasonable quantities are imported from Japan each year. Tight regulations on fishing, however, restrict the development of a market for swordfish. At present the recreational fishery is prohibited from selling swordfish and the commercial fishing industry is prohibited from targeting swordfish.

B. Imports

The Japanese Ministry of Finance reports steady exports of swordfish to South Africa during the years 1985-92. Exports in 1985 were 31 tons valued at $53,000 and they reached a high of 86 tons worth $154,000 in 1990. Japanese exports of swordfish to South Africa amounted to 68 tons worth $158,000 in 1992.[132]

C. Exports

United States import statistics document occasional shipments of swordfish from South Africa for the twenty-year period beginning in 1974 when ten tons worth $8,000 were shipped to the United States. A shipment of 40 tons worth $93,000 was made in 1978 and a 16-ton shipment worth $81,000 was made in 1979. Exports of swordfish to the U.S. originating in South Africa then declined sharply (1 ton in both 1982 and 1986).[133] South Africa's exports of swordfish to the United States increased in 1994 when 22 tons of swordfish were exported.[134] U.S. trade statistics show a sharp increase in 1995, when 159 tons of frozen swordfish worth $887,200 were imported from South Africa.[135]

The EU also reports growing imports of frozen swordfish (whole and fillets) during the last few years. Exports have gone from 590 tons in 1991 to 1,101 tons in 1994, making South Africa a major exporter of swordfish. However, these "exports" are believed to be transshipments from Asian-flag longliners operating in South African waters. Spain reported importing 587 tons of swordfish worth $1,734,127 from South Africa in 1993. In 1995, the EU imported 660 tons of frozen swordfish worth $1.4 million and 22 tons of frozen swordfish fillets worth $55,000.

Government policies

The government of South Africa has devoted considerable effort to following regulations established by ICCAT for the conservation and management of Atlantic tunas and swordfish. South African fishery officials de-commercialized swordfish in 1989 and no more than five swordfish per person per day may be caught and none may be sold[136]. South African authorities implemented ICCAT size limits (125 centimeters) and weight restrictions (25 kg) for swordfish in August 1992. South Africa also imposed domestic regulations limiting the take of swordfish to less than ten percent of the total catch of tuna species and prohibiting the sale of any swordfish caught by recreational fishermen or exceeding the ten percent limit. Violations of these prohibitions have not been a problem.[137]

Research

The Sea Fisheries Research Institute of South Africa conducts research on swordfish. However, given the relatively small landings of this fish, research efforts are fairly limited. South African marine biologists are much more active in studying tuna fisheries.

International relations

A. Multilateral relations

South Africa has been a member of ICCAT for a number of years and attempts to carefully observe the recommendations made by that organization. The small harvest of swordfish, however, limits the activity that the government of South Africa undertakes in this area.

B. Bilateral relations

South Africa established a 200-mile EEZ on November 1, 1977. A fishery agreement with Japan was negotiated on December 6, 1977, which reportedly remained in place through 1992, and with Taiwan on October 20, 1977, and January 26, 1978. As part of the agreement both nations received quotas from South African authorities. In 1992, Japanese fishermen were given a 500-ton quota for hake, a 2,000-ton quota for horse mackerel, and a 1,100-ton quota for panga. Taiwanese fishermen were issued a quota of 1,200 tons of hake in 1992. The fisheries quota with Japan reportedly was revoked in 1993. However, 90 Japanese longliners and 30 Taiwanese longliners were allowed to fish for tuna and swordfish in South Africa's waters in the years 1991-94; this was during the time when significant shipments of swordfish were being made to the EU.[138] The foreign fleet must report its harvests to local authorities.

South Africa also negotiated agreements with Israel (May 3, 1978), Portugal (April 9, 1979), and Spain (March 8, 1982). The Israeli agreement was revoked in 1991, that of Spain in 1992, and the others in 1993. A joint venture between Mozambique and South Africa remained operational in 1993, focusing on hakes.

Future trends

The Broadbill Foundation reported that a South African fishing company had undertaken a joint swordfish fishing venture with a foreign fishing company in 1995. The venture apparently was successful, but details are not yet available on the results.

At issue is whether South Africa will allow additional fleets of foreign-flagged vessels to fish for swordfish in its EEZ. A fleet of 120 Asian-flag longliners can catch considerable quantities of swordfish and this might impact the future development of South Africa's own fisheries.

It would be logical for South African fishing companies – which rank among the best in the world -- to target swordfish found just off their coast, especially considering the large number of Asian-flag vessels thought to be landing large quantities of swordfish for export to the EU. Before commercial fishing can become a reality, however, the government of South Africa must return to the pre-1989 policy of allowing swordfish to be caught commercially.

Tourism is flourishing and this might result in more recreational fishermen traveling to South Africa in search of these fish. Local recreational fishermen and women are also likely to fish for these species. It is likely that a "catch and release" approach to fishing could be adopted, given South Africa's generally conservation-oriented approach to fisheries.

SOURCES

Constitution of The Broadbill Foundation, P.O. Box 79, Woodstock, Cape Town, South Africa 7915, March 1995.

Payne, Andrew I.L. *et. al.*, *Oceans of Life off Southern Africa*, Vlaeberg Publishers, Cape Town, S.A., 1989.

Penney, A.J., Sea Fisheries Research Institute, "National Report on Tuna Fishing and Research Conducted by South Africa During 1994," *National Reports,* ICCAT, COM/95/33, Madrid, Spain, 1995.

Table 1. SOUTH AFRICA--Catch of swordfish, 1979-95.

Year	Landings		Total
	Longlines	Other gear	
	Metric Tons		
1979	0	28	28
1980	0	31	31
1981	0	9	9
1982	0	3	3
1983	0	2	7
1984	0	23	28
1985	0	3	7
1986	3	2	5
1982	0	2	5
1988	0	4	4
1989	3	0	0
1990	0	0	0
1991	0	9	5
1992	0	9	3
1993	0	4	4
1994	0	1	1
1995	0	2	2

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996 and FAO, unpublished report (data for 1995).

1.9

TOGO

Togolese artisanal canoe fishermen sporadically harvest small quantities of swordfish. The largest quantity harvested was 32 tons in 1986. Togo reported landing 14 tons of swordfish in 1994, but no swordfish in 1995. The EU reported importing one ton of swordfish from Togo in 1992 and 1993 and ten tons in 1995.

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Fishing grounds

Togo is a small West African country squeezed between Ghana to the west and Bénin to the east. Togo has a 56-km coastline and a Continental Shelf area of 1,200 km^2. Togo has a 200-nautical-mile EEZ that encompass an estimated 300 square km. There were about 2,400 marine fishermen and 2,000 inland fishermen in Togo's fisheries in 1989. There were also about 2,000 Ghanian nationals that fished in Togo's waters in 1986.[139] The value of the marine catch was about $13 million.[140]

Fleet

There were 256 artisanal wooden canoes and two decked, commercial trawlers in the Togolese fishing fleet in 1987.[141] There are two types of canoes in Togo's marine fisheries: an eight to nine-m pirogue with a crew of 11 or 12 and a smaller six to eight-m canoe which operates with a crew of nine fishermen. About half the fleet is equipped with outboard motors.[142]

Shipyards

Togolese fishing villages stretched out along the coast are able to provide services to artisanal canoe fishermen. Services to larger vessels are limited to the principal fishing port in Lomé.

Fleet operations and gear

Fishing off Togo is at its peak during July through September when fishermen attempt to harvest large pelagic species. During the remainder of the year the fishermen focus their effort on catching small pelagic species.[143]

Fishermen use encircling gillnets to catch small pelagic species such as sardines and anchovies, and longlines to catch larger offshore demersal species.[144]

Catch

A. General

Togo's catch has averaged around 15,000 tons since 1985. European anchovy (7,000 tons) and freshwater tilapia (5,000 tons) generally account for over half the total catch.

B. Swordfish

Togo reported a harvest of six tons of swordfish for the first time in 1985. The catch increased nearly fivefold to 32 tons in 1986. Harvests then declined and have never fully recovered. Togo reported landings of eight tons in 1993 and no landings in 1994.

Ports

Lomé and Kpeme are the two ports in Togo. However, fish are landed along the beach where the catch is usually sold and eaten in fishing villages.

Transshipments

No transshipments of swordfish are thought to take place through Togolese fishing ports. However, several Greek vessels were operating out of the port of Lomé where they were unloading their catches. No information is available on the nature of these landings, but high-value tuna and swordfishes may be shipped to European markets.[145]

Processing and products

It is likely that most of the catch of swordfish is consumed fresh in isolated fishing villages along the coast. What is not eaten locally is smoked or dried for sale in more distant inland markets. It is also likely that small quantities of fish are sold fresh in Lomé or possibly shipped to Ghana, Nigeria, or to the Côte d'Ivoire.

Companies

No information is available on Togolese companies dealing with swordfish products. There were three major fishing companies in operation in 1988. These companies were SOTOMARET, SOTRICO and IBERTO. These firms handled the import of frozen fish for the country.[146]

Trade

A. Imports

Togo imported $12.8 million worth of fishery products in 1993, mostly fresh or frozen.[147] Like many West African nations, domestic demand is met in part through imports of competitively-priced protein products, such as low-cost mackerel. Togo is not thought to import any swordfish.

B. Exports

Togolese exports of all fishery products were valued at $1.1 million in 1993 which included some shellfish and some frozen fish.

Any swordfish not consumed locally is probably exported to Ghana, Nigeria, or possibly the Côte d'Ivoire as dried or smoked fish pieces which are common in West Africa. The EU, however, also reports importing swordfish from Togo. EU import statistics reflect imports of one ton of frozen swordfish from Togo in 1992 and 1993 and ten tons of frozen swordfish worth $16,000 in 1995.

International relations/joint ventures

A few Ghanaian seiners and trawlers fish in Togolese waters and sell their catch in Lomé. Greek fishing vessels also operate out of the port of Lomé, but are not registered with Togolese maritime authorities and do not possess Togolese fishing licenses.[148]

Togo is not a member of ICCAT.

Future trends

Because Togo has such a short coastline and small Continental Shelf, it is not expected to expand its harvest of swordfish in the next decade.

SOURCES

Fish Supplies Bulletin, December 1988.

FAO, *Fish Supplies Bulletin, Togo*, INFOPECH, Abidjan, August 1989.

FAO, *Yearbook of Fishery Statistics - Commodities, 1993*, Vol. 77, Rome, 1995.

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996.

"Lomé-based Greek Fishing Vessel Seized in Ghana," U.S. Embassy, Lomé, April 25, 1989.

Table 1. TOGO--Landings of swordfish, 1985-95.

Year	Landings
	Metric Tons
1985	6
1986	32
1987	6
1988	6
1989	2
1990	3
1991	6
1992	5
1993	8
1994	14
1995	0

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996.

2

NORTH ATLANTIC OCEAN

In 1995, the total catch of swordfish in the North Atlantic Ocean was 16,408 tons according to ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996. African fishermen reported harvesting only 336 tons, which is only a small fraction of the total harvest. Most of the catch in the North Atlantic was made by Spanish fishermen who reported catching 6,952 tons in 1995.

Moroccan fishermen have consistently reported landing swordfish from the period 1965 to 1995. The harvest includes catches made by small longliners, traps (*palangriers*), and other gear. Most of Morocco's catch of swordfish, however, is made in the Mediterranean Sea. Liberia, which is geographically located above 5° N. reported some modest harvests of swordfish between 1980 and 1992. It is likely that civil disturbances in Liberia have been responsible for the decline in catches in recent years. Senegal reported catches in 1989 and in 1991-92, but has not reported any catches since then. It is likely that other West African states catch small quantities of swordfish that are not reported to ICCAT. Most of these catches are consumed in remote fishing villages as fresh or smoked fish.

2.1

CANARY ISLANDS

The Canary Islands, located in the mid-Atlantic off the coast of North Africa, have belonged to Spain since 1478. The islands have a small fishing community of their own which lands small quantities of fish. The Canary Islands are best known as a strategic base of operation and a transshipment point for fleets of fishing vessels from all over the world. Although the Canary Islands are an integral part of mainland Spain, the EU reports modest imports of fresh and frozen swordfish (called *picudo* or *aguja paladar* in the Canaries) from the Canary Islands since 1991.

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Fishing grounds

The Canary Archipelago is composed of seven islands and various islets about 100 km to the west of Morocco.[149] The fishing grounds between the Canary Islands and the African continent are exceptionally productive and fleets of highseas fishing vessels from all over the world have fished these grounds for generations.

Fleet

There are hundreds of vessels based in the Canary Islands. Each of the islands has its own fishery. Spain's highseas fleet also operates from Las Palmas and Santa Cruz; at least 200 of Spain's cephalopod (squid, octopus, and cuttlefish) fleet operates from these two islands.

Foreign-flag vessels operating from the Canary Islands in recent years have included Cuban, Cypriot, Faroese, Ghanaian, Greek, Italian, Japanese, Libyan, Mauritanian, Moroccan, Panamanian, Taiwanese, Republic of Korea (ROK), Senegalese, Trinidadian, USSR, and United States. This list shows the importance of the Canary Islands as a major facility serving fleets from around the globe.

Shipyards

There are ultra-modern shipyards located at Santa Cruz de Tenerife and at Las Palmas that can accommodate the largest ships in the world. Both ports boast a Syncrolift® system. Repairs can be undertaken by many firms at either port.[150]

Fleet operations and gear

The indigenous fishing fleet operates small vessels close to shore that catches and lands mostly fresh fish for local consumption. Information about these vessels and their fishing methods and gear is unavailable.

Catch

A. General

The FAO does not identify catches made by the Canary Islands, since these harvests are included under Spain. However, it is known that the waters to the south and southeast of the Canary Islands have important stocks of tuna.[151]

B. Swordfish

The author has no data indicating any harvests of swordfish by fishermen from the Canary Islands. It is possible that some small quantities of swordfish are being caught by local fishermen, since exports of fresh swordfish did take place in 1994. It is, however, more likely that a few longliners from the Spanish mainland may be operating out of the Canary Islands and landing their catches for shipment to Spain or other markets.

Ports

A. Las Palmas

The free port of Las Palmas was founded by Spaniards 500 years ago. It has ten km of berthing area able to accommodate all types of vessels, from supertankers to fishing vessels. The port encompasses 1.4 million square m (m^2), including 26,000 m^2 of covered area and 820,000 m^2 of open area. Las Palmas has a Syncrolift® system that can accommodate vessels up to 30,000 tons; a total of seven vessels can be serviced at the same time. Repairs can be undertaken by many other small firms at the port.[152]

B. Tenerife

The free port of Tenerife had a 2,000-ton Syncrolift® drydocking system installed in the early 1970s. The system can accommodate 14 vessels for repair at the same time.

Transshipments

The Canary Islands enjoy a "free trade" status which allows imports to enter and exit the Canary Islands without payment of duties. This facilitates shipment through the port and attracts firms involved in transshipping products through Las Palmas and Tenerife.

A. Las Palmas

The port of Las Palmas has 100,000 cubic m (m^3) of cold storage space able to accommodate cargo in containers, bulk, or pelletized form. Large quantities of cephalopods, whitefish, and tunas are unloaded by fishing vessels from all over the world for transshipment to distant markets. Approximately 350,000 tons have been shipped through Las Palmas in recent years to refrigerated vessels which arrive weekly to pick up shipments of frozen fish for transportation to Asia, Europe, Africa, or America.[153]

B. Tenerife

The port of Tenerife is not as important as the port of Las Palmas in terms of transshipments.

Processing and products

Most of the swordfish products being shipped through the Canary Islands are fresh or frozen. These products are likely gilled or gilled-and-gutted fish.

Companies

The author has no information on companies dealing with swordfish in the Canary Islands.

Trade

A. Imports

Complete, up-to-date statistical data about the Canary Islands' imports of swordfish are not available. However, Japan reports exporting modest quantities of swordfish to the Canary Islands during the past few years. Exports of swordfish were 14 tons worth $10,000 in 1985, 15 tons worth $9,000 in 1986, six tons worth $11,000 in 1988, five tons worth $9,000 in 1989, and nine tons worth $32,000 in 1990.[154]

B. Exports

The EU reports that the Canary Islands shipped 74 tons of frozen swordfish to EU markets in 1991, 95 tons in 1992, 34 tons in 1993, and 65 tons in 1994. In addition, 15 tons of frozen swordfish fillets were exported in 1992 and two tons of fresh swordfish were exported in 1994.[155] In 1995, the EU reported importing one ton of fresh swordfish and 1,185 tons of frozen swordfish worth $2.7 million.

Future trends

The Canary Islands are a major, international transshipment point serving fishing vessels from all over the world. It is interesting that relatively modest quantities of swordfish are reported being shipped through Las Palmas or Tenerife since thousands of port calls are made by European and Asian-flag longliners annually.

SOURCES

Bas, Carlos, "Canarias y sus posibilidades pesqueras," *Industrias Pesqueras*, December 15, 1987.

EUROSTAT data.

2.2

CAPE VERDE

Cape Verde island fishermen report catching small quantities of swordfish (called *espadarte*) in 1989. Cape Verde has been fishing for tuna for many generations and has 35 years of experience freezing and transshipping tuna to foreign markets. The country recently purchased 20 new tuna vessels and it is possible that small quantities of swordfish are now being landed along with tuna. Although landing statistics for swordfish are not available, the EU reported imports of 49 tons of frozen swordfish from Cape Verde in 1994. No imports were recorded for 1995. Cape Verde is a member of ICCAT.

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Fishing grounds

The Cape Verde islands are located in the North Atlantic Ocean about 620 km off the west coast of Senegal with a combined coastline of 965 km. There are ten islands and several islets in the archipelago which are divided into two regions: *Barlavento* (northern) and *Sotavento* (southern) groups of islands.[156] The islands are located in the middle of the Atlantic Ocean tuna fishing grounds where fleets of foreign-flag vessels have fished for tuna since the late 1950s.[157] Cape Verde has a 200-mile EEZ, which gives it control of more than 600,000 km^2 of fishing grounds.

Fleet

A. Artisanal

Most of Cape Verde's fishing fleet consists of about 750 small rowboats or sail boats in the four- to six-m range. Approximately 75 of these vessels are equipped with outboard motors. Vessels less than seven m are considered as "artisanal" while those more than seven m are considered as part of the "industrial" fishing fleet. By 1989, there was a total of 1,404 artisanal fishing craft registered in Cape Verde operated by 3,666 full-time and 582 part-time fishermen. Approximately 40 percent of these vessels operated with outboard motors.[158]

B. Industrial

Cape Verde purchased three 39-m purse seiners from A.G. Weser shipyards of Bremerhaven, West Germany in 1970. Each of the 360-grt vessels were reconfigured as a tuna pole-and-line vessel and was fishing for tuna off Angola in the early 1980s.[159]

In the early 1980s, Cape Verde received funding from Saudi Arabia and Abu Dhabi to build 12 new vessels for tuna fishing. Four of the vessels were to have been 22-m long and eight were to have been 16-m long.[160]

In 1988, Cape Verde's industrial fishing fleet included 58 vessels more than six m in length. Nine of these were tuna vessels and included two highseas clippers, the *Adilmar* (104-grt) and the *Sul do Maio*, and one longliner, the 419-grt *Mordeira*.[161] At some point during the following five years, Cape Verde purchased an eight-m prototype fiberglass vessel, the *Neto de Fengur*. It was used for line fishing and performed well.[162]

In 1993, the Cape Verde Fishing Authority placed an order for 20 fiberglass fishing vessels with Krona Marin AB of Sweden. The $5-million order called for five shipments of four vessels between December 1993 and January 1994. The vessels were to be about 20-grt and 11 m in length. The order followed delivery of two test vessels delivered in 1992. The Cape Verde Fishing Authority planned to sell the vessels to private fishing crews.[163]

Shipyards

There are a number of shipyards located on the islands, including dry dock facilities of the Portuguese navy.[164] Improvements at Mindelo's harbor (Porto Grane) have been made and new ship repair facilities were opened in 1983 as part of a program to provide repair services to fleets of foreign fishing vessels operating in the mid-Atlantic Ocean.

The Cabnave shipyard in Mindelo (operated by the Cape Verde Ministry of Industry) has been identified as providing service and warranty work for the 20 tuna vessels ordered for delivery in December 1993/January 1994.[165]

Fleet operations and gear

The artisanal fishing fleet generally works within a few km of the coastline where it catch groupers, sea breams, and other warm-water species. Data from 1989 indicates that artisanal fishermen can harvest small quantities of swordfish from time to time.

The industrial fleet fishes for mackerel and horse mackerel and sardinellas. Part of the fleet also fishes for yellowfin (summer months) and skipjack (autumn months) using pole-and-line methods from 12-m to 20-m vessels. The industrial fleet reportedly made fairly good harvests of swordfish in July 1989.

Catch

A. General

Cape Verde's fisheries catch has averaged 7,000 tons in recent years. In 1993, the catch was 7,130 tons and included 2,200 tons of yellowfin tuna, 294 tons of skipjack, 251 tons of bigeye tuna, and 100 tons of little tunny. Tuna fishing, using pole-and-line and longlines, is well-established in Cape Verde.

B. Swordfish

Cape Verde reported catching three tons of swordfish in 1989. The catch was landed on the island of Fogo at the port of Fonte Vila (2,157 kg) and on the island of San Vicente at the port of Sao Pedro (771 kg). Most of the catch (1,343 kg) came in July 1989 using longline gear (*linha*). Artisanal fishermen using hand lines, from the port of Sao Pedro on the island of Sao Vicente, caught 749 kg of swordfish in July 1989.[166] This information conflicts with catch data issued by the FAO *Yearbook of Fishery Statistics - Catches and Landings, 1993*, which reported that Cape Verdians caught 12 tons of swordfish in 1989, a difference of nine tons.[167] ICCAT does not report any swordfish catch data for Cape Verde.

Ports

The key ports in Cape Verde include Mindelo (São Vicente), Praia (Santiago), Tarrafal, and Brava. However, there are some 88 harbors and landing beaches where fish are also brought ashore by small-scale fishermen.

Transshipments

A 6,000-ton cold store was built with assistance from the Netherlands in 1981. The facility was used to store local tuna catches and also small quantities of small pelagics caught elsewhere. A second cold store, designed to hold lobsters, was built in 1982. The large Interbase cold store was used by Joint Trawlers of Sweden to store horse mackerel caught off Peru and then stored in Cape Verde for transshipment to Nigeria. In July 1992, the fish was being loaded aboard the *Arctic*, a frozen fish carrier operated by Seatrade Groningen BV of Holland.[168]

Processing and products

Cape Verde has the ability to produce frozen product for export to overseas markets. The nation also has several tuna canneries, but swordfish is not generally canned. It is possible that the country could also produce limited quantities of swordfish fillets or loins for export.

Companies

The state-owned Interbase company of Cape Verde fished for tuna for export in the early 1980s. The company operated several 12-m pole-and-line vessels and three-man handline row boats. The catch was either exported or sold domestically. The company operated six small canneries, in addition to a cold storage facility.[169]

Trade

A. Imports

Cape Verde imports some salted-dried cod and frozen fish from Portugal and Norway and some canned sardines and mackerel for Portugal. Cape Verde is not believed to import swordfish.

B. Exports

The EU reported importing 49 tons of frozen swordfish from Cape Verde in 1994. No imports of swordfish were reported for previous years and no imports were noted for 1995.

International relations/joint ventures

A. International relations

Spanish tuna vessels were authorized to fish Cape Verde waters and land tuna at Sao Vincent in the early 1980s. The agreement allowed 20 Spanish vessels to fish in Cape Verdian waters (beyond their 12-mile territorial limit), with the expectation that the vessels would use their cold storage facilities and shipyards. The agreement stated that Spain would help protect these stocks and would conduct fisheries research.[170]

Iceland is currently working closely with Cape Verde, but this collaboration is in the field of fisheries research. Iceland has assisted in conducting stock assessments and has provided other assistance to the fishing industry.[171]

Cape Verde is a member of ICCAT.

B. Joint ventures

No information was available regarding any joint venture fishing operations targeting swordfish at this time.

Future trends

Cape Verde has a 30-year history of dealing with foreign fleets landing tuna and other fish for processing and transshipment to distant markets. Cape Verde's fishermen have also participated in fishing for tuna for many generations. Processing and shipment of tuna is a well-established business in Cape Verde and the addition of 20 new tuna vessels should help increase landings of tuna in the next few years. It is possible that swordfish will be a bycatch in this growing fishery and that this harvest will be frozen and exported to the EU. Increased landings and exports of swordfish from Cape Verde can be anticipated in the near future.

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2.3

GUINEA

The Republic of Guinea does not report catching swordfish. The EU reports importing no swordfish from Guinea prior to 1994. In 1995, however, the EU reported importing 179 tons of swordfish from Guinea.

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Fishing grounds

The Republic of Guinea is situated on the Atlantic Ocean between Guinea (Bissau) and Sierra Leone. The Continental Shelf off Guinea is fairly wide Guinea's total shelf area (to 200 miles) is approximately 21,000 km^2.[172] Guinea has a 320 km coastline.

Fleet operations and gear

Traditional canoe fishermen use canoes that are hollowed out from a single tree. Most of the fishing effort is aimed at catching sardines and other small species of fish.

Catch

Guinean fishermen fish for sardines and other marine fish (not identified). The total Guinean catch has ranged between 34,000 tons and 37,000 tons in the past few years.[173] Guinea reports no catch of swordfish.[174]

Ports

Landings of fish caught by larger vessels are made at the ports of Conakry, Boke, and Kamsar.[175] There are, however, many small fishing villages and beaches where fish is brought ashore in Guinea.

Transshipments

The port of Conakry is a transshipment point for frozen tuna being shipped to distant markets. It appears that the port of Conakry is also being used to transship swordfish to the EU. In 1995, the EU reported importing 179 tons of swordfish from Guinea.

Processing and products

Swordfish caught by Guinean fishermen are gilled or gilled-and-gutted for delivery to cold storage facilities. The fish are usually landed fresh each morning.

Companies

The author has no information about any Guinean firm dealing in swordfish.

Markets

A. Domestic

Much of the fish that is landed along isolated beaches is either sold fresh for immediate consumption or is sold to village women who generally smoke the fish for sale in local villages. It is estimated that most fish consumed in Guinea are eaten fresh, smoked in traditional ovens, or dried.

B. Trade

1) Exports

The EU is a market for Ghanaian swordfish. EU import statistics show that Guinea exported 179 tons of frozen swordfish valued at $390,000 to the EU in 1995. There were no records of shipments being made prior to 1995.

2) Imports

Guinea is not thought to import swordfish.

International relations

Guinea is a member of ICCAT.

Future trends

Guinea is not expected to significantly increase the size of its artisanal canoe fishery for swordfish. It is likely that Guinean exporters may assist in the transshipment of swordfish to the EU in the next few years.

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2.4

LIBERIA

Liberia is a small, West African nation that harvests only minor quantities of swordfish. The country was ravaged by civil war starting in 1990. A peace treaty was negotiated under UN auspices and tentative efforts are under way to restore peace to this country. The civil war destroyed much of Liberia's economy, especially around the capital city of Monrovia.

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Fishing grounds

Liberia borders the North Atlantic Ocean between the Côte d'Ivoire to the east and Sierra Leone to the west. Liberia lies to the north of the Equator and astride the 5° North line chosen by ICCAT to separate the North Atlantic from the South Atlantic for statistical reporting purposes. Thus, unlike most West African nations, Liberia's harvest of swordfish is listed under the North Atlantic.

Liberia has a 579-km coastline and a 200-mile EEZ. Liberia's Continental Shelf area encompasses 18,400 km^2 while the EEZ area includes 67,000 km^2. This is a rich area with a potential marine resource of 60,000 tons and ample resources of valuable shrimp.[176] Prior to the civil war which started in 1990, Liberia was reasonably self-sufficient in the production of fish and shellfish. Mesurado Fisheries, in particular, was well known for producing a high quality shrimp pack for export to foreign markets.

Fleet

A. Artisanal

Marine artisanal fisheries in Liberia are conducted by the Kru and Popoh fishermen using one- to three-man dugout canoes. There were about 1,000 artisanal fishermen in Liberia in 1976. Ten years later, in 1986, there were 1,050 non-decked, artisanal canoes in Liberia's fisheries operated by some 6,600 artisanal fishermen.[177]

Fishing is also done by Fanti fishermen from Ghana using "Accra" canoes which carry seven to 11 men. These larger canoes (up to nine m) are powered by outboard motors as well as sails.

B. Commercial

There were 34 trawlers in the Liberian fishing fleet in 1986. It is thought that these were primarily shrimp trawlers working the rich shrimp fishing grounds found along Liberia's coast. These vessels were crewed by 200 fishermen.[178]

In 1987, there were 20 commercial vessels registered by eight fishing companies. Shrimp catches were steady and profitable. Shore facilities, including dry docks, cold storage, and freezing facilities, had been refurbished and expanded.[179] More recent data on the fishing fleet are not available.

Liberia is also known as a nation where vessels can be registered with minimal formalities. There are a number of Liberian-flag vessels that operate far from Liberia with little or no oversight by Liberian authorities.[180]

Shipyards

In the early 1970's there was a small dry dock that could accommodate vessels of up to 500 tons. The Mesurado Company -- an important shrimp fishing company -- operated a 225-ton capacity Syncrolift® system.[181] There is no information on the current status of these shipyards.

It is expected that there are many small facilities along Liberia's coast where dugout canoes can be built and where outboard motors can be repaired.

Fleet operations and gear

The indigenous Kru fishermen generally use hand lines to catch bonga, snapper, and groupers, and small nets to catch herring.[182] The Fanti fishermen from Ghana use ring nets, drift nets, beach seines, and hand lines to catch fish.[183] It is likely that the Kru fishermen observed the Ghanaian fishermen over the years and adopted some of their fishing techniques. The "Accra" type of canoe is used to catch large pelagic fish at night along the edge of the Continental Shelf and it is likely that Liberian fishermen could have adopted these techniques in recent years.

Catch

A. General

Liberia has an estimated potential for harvesting 60,000 tons of marine fish and shellfish.[184] In 1993, Liberian fishermen caught 7,800 tons of fish including 4,000 tons of freshwater fish. The single most important species caught in 1993 was West African croaker (800 tons).[185] Other important species traditionally caught by Liberian fishermen include sea breams, sardinella, bonga, and other finfish.[186]

B. Swordfish

Liberian fishermen first reported catching five tons of swordfish in 1980. Harvests quickly grew to 53 tons in 1983. No landings were reported in 1984 and then harvests resumed during the 1985-89 period, reaching 35 tons in 1989. In 1990, catches dropped to three tons, followed by no catches in 1991, seven tons in 1992, 14 tons in 1993 and 26 tons in 1994.[187] No harvests have been reported to ICCAT for 1995. It is likely that the civil war in Liberia contributed to the abrupt decline in harvests during the period 1990-95.

Transshipments

Liberia had the ability to freeze 18 tons of fish per day and to produce 30 tons of ice on a daily basis in 1986. It also had 6,500 cubic m of cold storage space.[188] Liberia did transship tuna to various world markets during the 1960s through the 1970s. It is unknown if these facilities are still operational, but Liberia is exporting some fresh, chilled, or frozen products and thus some facilities are probably operating.

Ports

Buchanan, Greenville, Harper, and Monrovia are the primary ports in Liberia.

Processing and products

It is likely that most of the swordfish caught by artisanal fishermen are sold as fresh, gilled or gilled-and-gutted fish. The fish probably are landed and immediately sold to women buyers at the beach; the product can be cut into smaller portions for smoking or drying. Many West Africans buy small pieces of fish which they use in stews; smoked swordfish might be

used in this fashion. Some swordfish is probably also sold to local hotels or expatriots living in the country.

Companies

There were approximately 16 companies involved in Liberia's fishing industry in 1988.[189] Mesurado Fishing Company was one of the oldest companies, going back to its foundations in the 1960s. Mesurado has been involved in both tuna and shrimp fishing and once dominated Liberia's fishing industry. The listing of fishing companies included the Italian-Liberian Fishing Enterprise and a number of other companies that cannot be identified as to country of origin.

Trade

Any swordfish not consumed locally is exported for hard currency. This is the custom in most West African states. However, it is possible that the civil war in Liberia has disrupted trade patterns to such an extent that fishermen are unable to ship their catch to Monrovia for sale to exporters. In any event, the EU reported importing no swordfish during 1991-93 and only one ton of swordfish from Liberia in 1994.

A. Imports

Liberia imported $2 million worth of fresh, chilled, or frozen fish in 1993 down from $6 million imported in 1990.[190] It is unlikely that swordfish was included in these imports due to the relatively high price that can be obtained on the world market for this valuable species.

B. Exports

Liberia exported $1.4 million worth of fishery products in 1993, mostly fresh, chilled, or frozen fish and lesser quantities of shellfish.[191] This suggests that Liberia does have cold storage facilities in operation and that fish are being delivered to a central location for export to foreign markets.

The EU reported importing one ton of fresh swordfish from Liberia in 1994. It is not clear why this swordfish would be classified as "fresh." It was probably frozen swordfish given the very hot climate in Liberia.

International relations/joint ventures

A. International relations

As of 1978, Liberia did not have any international fishery agreements. Information on more recent agreements (if any) is not available.

B. Joint ventures

The Italian-Liberian Fishing Enterprise was listed as a company fishing in Liberian waters in 1988 according to a U.S. Embassy report.[192] The Embassy noted that vessels of Italy, Greece, Taiwan, and the United States were all fishing in Liberian waters. Information on the status of joint venture fishing operations since the civil war began is not available.

Future trends

Liberia is not expected to become a key supplier of swordfish until economic and political stability returns to the country and reconstruction can take place. It is unlikely that Liberia will be able to attract foreign fleets or joint venture operations to its shores in view of the destruction of many important parts of the infrastructure needed to support modern fishing operations.

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Table 1.--LIBERIA. Landings of swordfish, 1980-95

Year	Landings
	Metric tons
1980	5
1989	34
1982	34
1988	53
1984	0
1986	24
1986	16
1982	34
1988	19
1989	35
1990	3
1991	0
1992	7
1993	14
1994	26
1995	0

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2.5

MOROCCO

(See Morocco in the section dealing with the Mediterranean Sea)

2.6

SENEGAL

Senegal is a West African nation that has had long ties with the world tuna fishing community. While Senegal does not report any landings of swordfish (called *espadon* in Senegal) the EU reports importing swordfish from Senegal during the period 1991-95. In 1995, for example, the EU imported 281 tons of fresh and frozen swordfish worth $738,000 from Senegal.

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Fishing grounds

Senegal is a West African nation bordering the North Atlantic Ocean between Guinea (Bissau) to the south and Mauritania to the north. The Gambia is located in the middle of Senegal. Senegal has a 531-km coastline, a 200-nautical-mile EEZ and a 12-mile territorial sea.

Seasonal upwellings off the coast of Senegal produce some of the richest stocks of fish found off West Africa. Especially abundant species, which include sardinella, mackerel, and sea bream, can be found on the 23,770 km^2 Continental Shelf. The fishing industry employs about 100,000 people and fish is a key source of animal protein in the Senegalese diet.[193]

Fleet

Senegal has an artisanal fishing fleet, a commercial trawl fleet that fishes for shoaling species and shrimp, and a very modern fleet of highseas tuna purse seiners. The artisanal fleet consisted of about 6,774 pirogues in 1985 and between 6,000 to 9,000 vessels in 1987.[194] Senegal's highseas fleet of tuna clippers once ranked as the largest and most developed in West Africa.

Shipyards

The port of Dakar has modest repair facilities where modern fishing vessels can obtain needed services. The artisanal fishing fleet relies on small-scale repair facilities provided by mechanics living in fishing villages that dot the Senegalese coastline.

Fleet operations and gear

In the 1960-70 period, most of the fleets consisted of pole-and-line vessels. Pole-and-line fishing for tuna in Senegal declined over many years before ending in the mid-1980s.[195] In the early 1970s, the Societe Senegalaise d'armement pour la Pêche (SOSAP), purchased a fleet of 15 purse seiners, including three from Tacoma Boatbuilding Co., Inc., of the United States.[196] This followed the switch to purse seiners by French fishermen in 1969.[197] Senegalese fishermen, frequently in partnership with French firms, continued purchasing modern tuna purse seiners and eventually the Senegalese tuna fishing fleet was one of the most modern in West Africa.

Catch

A. General

Senegal's fisheries increased from 260,700 tons in 1988 to 377,700 tons in 1993. The harvest of sardinella (205,700 tons) in 1993 was important in the recovery of Senegalese fishery harvests in recent years.

B. Artisanal

Senegal's artisanal fishermen averaged landings of around 170,000 tons during the period 1980 to 1987 with a high of 214,200 tons in 1987 and a low of 141,200 tons in 1982. Most of this catch is used for local consumption, but increasing quantities are being purchased for further processing.[198]

C. Tuna

Senegal has a long history of cooperating with ICCAT. Senegal provides complete data on harvests of tuna, by fishing gear, and this data goes back many years. Senegal reports catches of tuna ranging from 19,366 tons in 1975 to 2,511 tons in 1993.[199]

D. Swordfish

Senegal reported no harvests of swordfish for the period 1965 to 1988. Senegal then reported a catch of one ton in 1989, no harvests in 1990, and six tons of swordfish in 1991 and 1992. No further catches have been reported according to ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996. The harvest of six tons of swordfish in 1991 and 1992 was made by Senegalese fishermen using handlines.[200]

There are few other references to Senegalese harvests of swordfish in Senegalese statistical data. Given the precise information provided on the harvest of tuna and billfish, it is likely that swordfish is not caught by Senegalese fishermen, or if caught, is caught in relatively small quantities in remote fishing villages where it is immediately consumed and not reported to Senegalese authorities.

It is more likely that swordfish is being caught by European- or Asian-flag longline vessels and that these fish are being transshipped through the port of Dakar. It is possible that some quantities of swordfish are being smoked for export to other West African countries, including the Côte d'Ivoire where smoked swordfish from Senegal is a popular import.

Ports

Senegal's main ports include Dakar, Kaolack, Matam, Podor, Richard-Toll, Saint-Louis, and Ziguinchor. In addition, there are hundreds of beaches where fish are landed for sale to fishmongers living in fishing villages along the coast. Dakar, the capital city, is the main tuna landing port in Senegal. It has excellent cold storage and freezing facilities.[201]

Transshipments

Senegal has a 40-year history of unloading, storing, and shipping frozen tuna, fish, and shellfish from domestic and foreign fleets operating in or near Senegal. Shipments of tuna from French, Spanish, and Asian-flag vessels are common. Sightings of swordfish being unloaded at the port of Dakar were made by Michael Parfit in an article written for the November 1995 issue of *National Geographic*.[202]

Processing and products

Any swordfish caught by artisanal fishermen is likely to be landed fresh for immediate consumption in local fishing villages. Some swordfish might be smoked for sale in inland communities. Swordfish caught by some of the industrial fleet might be sold as fresh or frozen products which might also be smoked for export to West African countries. Swordfish landed by foreign flag longliners are probably gilled or gilled-and-gutted in frozen form for transshipment to distant markets.

Companies

The author has no information on Senegalese companies dealing with swordfish. The largest tuna processors in Senegal include Societe Nouvelle des Conserveries du Senegal (SNCDS), Interco, and Peche et Froid Senegal (PFS). SNCDS are the largest tuna canners in Senegal with exports of canned tuna being shipped mostly to France. Interco is another important tuna cannery which also exports to France. PFS exports to France, the Côte d'Ivoire, and Cameroons.

Trade

A. Imports

Senegal is not thought to import swordfish.

B. Exports

The EU reports importing both fresh and frozen swordfish from Senegal during 1991-95. In 1991, for example, the EU imported eight tons of fresh swordfish and five tons of frozen swordfish. In 1992, the EU imported seven tons of swordfish meat (frozen, unclassified) followed by five tons of fresh swordfish and 83 tons of frozen swordfish in 1993. These 88 tons were valued at $224,000 in 1993. Exports from Senegal included five tons of fresh swordfish and 35 tons of frozen swordfish in 1994.[203] Spanish import data shows that Spain imported 83 tons of swordfish from Senegal worth $296,259 in 1993.[204] In 1995, the EU imported 281 tons of fresh and frozen swordfish worth $738,000 from Senegal.

Senegal exported 300 kg of swordfish to the United States in 1983, 100 kg in 1990, and 900 kg in 1991 and 1992.

International relations/joint ventures

A. International relations

The first European fishermen to fish for tuna out of Senegal were the French who began fishing in 1953. In 1956-57, there were 42 French vessels fishing for tuna out of the port of Dakar and this reached 87 vessels in 1958-59. In 1960, France established a bilateral fisheries agreement with Senegal. This agreement was renegotiated in 1974 and remained in force until 1979 when the EU took over responsibility for negotiating fisheries agreements for its member states.[205]

Senegal signed a series of fisheries agreements with West African states, beginning with Nigeria in 1965. Subsequent agreements with African states include the Gambia (in 1967 and 1982), the Côte d'Ivoire (1976, 1977, and 1979), Guinea (Bissau in 1978 and 1982), Cape Verde (1982), and Mauritania (1974, 1980, and 1983).[206]

The EU-Senegal fisheries accord was the first between the EU and a developing nation. The agreement, which was signed in June 1979, covered fishing rights for a number of small French trawlers, several tuna vessels, and some Italian freezer trawlers. This agreement included EU financial assistance to Senegal. A new protocol was signed on January 12, 1984[207] which allowed 40 French, five Greek, and three Italian vessels to catch 38,091 tons of fish and shellfish in Senegal's waters. The harvest included 29,993 tons of tuna caught by 20 French and 18 Spanish tuna vessels.[208]

Short-term extensions of the agreement were reached in 1986 to allow negotiations to continue in the absence of a long-term accord. Senegalese demands for increased EU payments resulted in the delays, but agreement was finally reached in 1987. The resulting agreement, which ran from October 1, 1986, until February 28, 1988, included significantly higher EU payments to Senegal. The agreement also included provisions for EU vessels

to land some of their catch in Senegal for processing.[209] This agreement was followed by an exchange of letters extending the agreement until February 28, 1990, and authorized 29 French and 26 Spanish vessels to fish in Senegal's waters.[210] An additional exchange of letters extended the agreement until April 30, 1992.[211] The continued agreement permits EU vessels to fish for tuna, cephalopods, and shrimp in Senegalese waters. A percentage of the catch was supposed to be landed in Senegalese waters. A $36-million payment was to be made to Senegal in two equal annual installments.[212] An extension to the agreement with Senegal was accepted by the EC Commission on July 22, 1993, retroactive to October 2, 1992, which was to run through October 1, 1994. The agreement permitted 79 tuna vessels and trawlers amounting to 31,000-grt to operate in Senegalese waters in exchange for an EU payment of $39 million.[213] Information on current arrangements is not available.

Senegal and Spain signed a fisheries agreement on June 1, 1972. In exchange for fishing rights, Spain agreed to help Senegal in fisheries research, land a portion of its catch in Senegalese ports, and train Senegalese fishermen. This agreement (renegotiated in 1974, 1975, 1979, and 1982) remained in force until Spain joined the EU in 1986; thereafter the EU negotiated fisheries agreements with Senegal on behalf of Spain and all other EU member states.[214] As a result of these agreements Spanish vessels were fishing for swordfish as early as 1984, when 550 tons of swordfish were caught in Senegalese waters.[215]

Senegal and Japan reached a fishery agreement on October 14, 1991, which gave Japanese vessels permission to fish for tuna in Senegalese waters. Two of these vessels were required to deliver their catch to Senegalese firms for canning.[216] Senegal also negotiated bilateral fisheries agreements with the USSR (1965) and Poland (1976).[217]

B. Joint ventures

Senegalese businessmen have a long history of working closely with French tuna industry interests to establish joint venture fisheries, management agreements, and onshore canneries, processing, and export arrangements. Similar arrangements have been concluded with many other countries, including the United States.

Future trends

Senegal has the experience and location to fish for tunas in the Atlantic Ocean. There is no particular reason why Senegalese business interests should not fish for swordfish, except that they do not have experience fishing with longlines. This would require an investment in new vessels -- or a joint venture arrangement -- if it were to succeed. There are no signs that Senegal is currently exploring this option. Thus, it is anticipated that Senegal will continue to serve as a transshipment point for fleets of European- or Asian-flag longliners unloading their catches at the port of Dakar.

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2.7

SIERRA LEONE

Sierra Leone does not report any landings of swordfish. However, the EU reports imports of large quantities of swordfish originating from Sierra Leone in 1991-93. Smaller quantities of swordfish were exported to the EU during 1994-95. It is likely that these "exports" are transshipments being made by Spanish or Asian-flag longline vessels fishing for swordfish in the southern part of the North Atlantic.

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Fishing grounds

Sierra Leone is a West African nation located north of Liberia (above 5° North) and south of Guinea (Conakry). Sierra Leone has a coastline of about 402 km and a wide Continental Shelf area of an estimated 24,800 km^2. The nation has a 200-nautical-mile EEZ and an EEZ area estimated at 45,400 km^2.

Fleet

Sierra Leone had an industrial fleet of 126 vessels in 1992, including 34 demersal trawlers, 65 shrimp trawlers, five canoe support vessels, 15 purse seiners, one longliner, and six processor/freezer carriers. This fleet at one point included 33 longliners out of a fleet of 201 vessels in 1988.[218]

Shipyards

No local shipbuilding industry exists in Sierra Leone, although wooden vessels of less than 40 tons can be built locally. There are limited dry-docking facilities for vessels of up to 250-grt in Sierra Leone where minor repairs can be made.[219]

Fleet operations and gear

Sierra Leone has three distinct fishing fleets: (1) an artisanal, canoe-based fishery exploiting inshore stocks and providing fish for local consumption, (2) a national industrial fleet of small trawlers fishing for shrimp for export markets, and (3) a foreign fleet which exploits offshore pelagic and deep-water demersal resources.[220]

Artisanal fisheries involve approximately 7,000 canoes. Only a small percentage of these canoes are equipped with outboard motors. The most popular canoe is the Ghana-style, planked canoe (six to 12 m in length).[221] Fishermen using the Ghana-style canoes use the "ali" (ring) net while fishing for small pelagics close to shore. Gillnets, setnets, castnets, beach seines, and hook and lines are also used in the artisanal fisheries.[222] No swordfish are reported as caught in these fisheries.[223]

The industrial fleet of shrimp trawlers operates close to shore and catches mostly shrimp for export and some quantities of croakers, threadfins, marine catfish, bonga, and other fish which it sells locally. This fleet does not target swordfish.[224]

The foreign fleet includes a number of vessels which could easily harvest swordfish. The foreign fishing fleet included ten longliners in 1985, eight longliners between 1986-87 and 33 longliners in 1988. The number of longliners then declined to three vessels in 1989 and to no vessels in 1990. In 1991, however, five of these vessels were registered in Sierra Leone, but the number declined to one vessel in 1992.

It is interesting to note that the EU reported imports of 388 tons of frozen swordfish worth approximately $1.3 million in 1991 and 462 tons of frozen swordfish worth about $1.5 million in 1992. The author believes that one to five longliners (probably fishing for tuna) could land small quantities of swordfish as an incidental harvest. However, quantities approaching 400 tons and over cannot be viewed as "incidental" harvests. The author speculates that foreign fishing fleets, not licensed to fish in Sierra Leone's waters, are using the port of Freetown to transship their catches to markets in the EU. The only fleet of longliners believed to be operating in waters of the southern Atlantic are those of Spain.

Catch

A. General

Sierra Leone's statistics show that the catch has gone from an average of 200,000 tons between 1985-90 to around 100,000 tons in 1990-91.[225] The FAO (FAO/UN) reports that Sierra Leone's fishermen caught 61,415 tons of fish in 1991 and 62,046 tons in 1993. The decline in catches appears to be the result of the decline in the industrial catch by foreign fleets in recent years; harvests went from about 150,000 tons in 1985 to slightly more than 50,000 tons in 1991. The artisanal harvest has remained fairly steady at around 45,000 tons in recent years.[226]

B. Swordfish

ICCAT and FAO does not report any landings of swordfish by Sierra Leone. It is noteworthy that swordfish is common to the waters of the Upper Guinea coast.[227]

Ports

The principal ports in Sierra Leone are Bonthe, Freetown, Kissy (outside of Freetown), and Pepel. In addition to these ports there are hundreds of small fishing communities along the coast where canoes come ashore to land and sell their catch of fish.

Transshipments

Sierra Leone has limited facilities for the transshipment of tuna, shrimp, and other finfish.[228] It is thought that most, if not all, of the "exports" of swordfish from Sierra Leone in recent years are actually transshipments. The author speculates that these transshipments are coming from Spanish or Asian longliners that operate beyond Sierra Leone's 200-mile EEZ. The author has no information to document this belief, but Spain reports importing 233 tons of swordfish worth $726,667 from Sierra Leone in 1993.[229]

Processing and products

It is likely that most swordfish caught by Sierra Leonean fishermen are landed as fresh fish for immediate consumption in nearby fishing villages. Some swordfish might be smoked or possibly dried for sale to inland villages or in the capital city of Freetown.

Companies

There are about 20 fishing companies in Sierra Leone that have (or had) contracts with foreign fishing companies in the past few years. The most important companies include Apex Fishing Company, Bangao Fishing Company, Commercial Fishing Enterprise, Marine Fishery Development Company, Marine Supplies Ltd., Moreah Fishery Development Enterprise, Okeky Agencies Ltd., Scan Fishing Company, and Sierra Fishing Company.[230] No information is available on whether any of these companies are involved in

fishing, processing, handling, transshipping, or exporting swordfish.

Trade

A. Imports

Sierra Leone is not thought to import any swordfish.

B. Exports

EU trade statistics show that Sierra Leone exported 388 tons of frozen swordfish worth approximately $1.3 million to the EU in 1991. This increased to 462 tons worth an estimated $1.6 million in 1992. However, these exports have since declined to 227 tons in 1993 worth $0.5 million. Spain reported importing 233 tons of frozen swordfish worth $726,667 in 1993.[231] The EU reported importing 74 tons of swordfish valued at $0.2 million in 1994 and 25 tons of swordfish worth $62,000 in 1995. The exports in 1991-93 helped place Sierra Leone as one of the major African exporters of swordfish to the EU.

International relations/joint ventures

A. International relations

The first discussions of a possible fishery agreement between Sierra Leone and the EU came during a visit by Sierra Leone's President, Siaka Stevens, to Belgium in 1979.[232] However, the author has no record of an agreement until April 25, 1990, when a 2-year agreement was initialed allowing licenses to be issued for 46 tuna seiners, 43 pole-and-line vessels, and an unspecified number of trawlers fishing for crustaceans, cephalopods, and finfish, as well as demersal longliners, in exchange for payments of $6 million in two annual installments.[233]

There was a bilateral fishing agreement between the former USSR and Sierra Leone between 1975 and 1990. Both governments decided to discontinue this agreement after 1990.[234]

There reportedly have been no bilateral fishing agreements between Sierra Leone and any other country since 1990. Fishery agreements do allow for joint venture operations and royalties and the sale of licenses generates about $1.5 million in annual fees.[235]

B. Joint ventures

Sierra Leone has undertaken joint venture fishing agreements between local fishing companies and foreign vessel owners for many years. In the 1960's, for example, there were nine Italian trawlers operating and Van Camp opened a tuna transshipment facility in the port of Freetown to handle landings of tuna from Japanese, Spanish, Korean, and French vessels.[236] In the 1970's, French, Greek, U.S., and Liberian vessels fished for shrimp in Sierra Leone's waters. East European, Japanese, French, and Spanish vessels fished for demersal species, while U.S., French, Korean, and Japanese vessels fished for (or transshipped) tuna off the coast of Sierra Leone. Prior to 1990, the joint venture fleets included mostly Soviet, Greek, Italian, Chinese, and Senegalese vessels. Since 1990, the joint venture fleets have included Chinese, Republic of Korea, Greek, and Ukrainian vessels, in descending order.[237]

Future trends

It is unlikely that Sierra Leone will become an important source of swordfish in the near future. There is always the possibility that a joint venture fishing operation for swordfish could take place. Sierra Leone is likely to remain a transshipment point for swordfish being shipped to EU markets. However, the trend for shipments has decreased in recent years.

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Fisheries Survey of Sierra Leone, ICA/W Survey Team, September 4-15, 1961, p. 6 and Geoffrey J. Williams, *The Fishing Industry of Sierra Leone: A Geographical Analysis*, unpublished report.

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"Pesquería Española del Pez Espada," Subdirección General de Recursos Internos Comunitarios, Direccion General de Recursos Pesqueros, Ministerio de Agricultura, Pesca y Alimentacion, Madrid, Spain.

West Africa, "Siaka reports on EEC visit, October 15, 1979.

Williams, Geoffrey J., *The Fishing Industry of Sierra Leone: A Geographical Analysis*, unpublished report.

B.

MEDITERRANEAN SEA

The swordfish harvest in the Mediterranean Sea by North African fishermen has grown steadily from 214 tons in 1970 to 2,763 tons in 1988. The catch declined to 846 tons in 1989 and increased to 1,499 tons in 1994 with Morocco (733 tons), Algeria (600 tons), and Tunisia (166 tons) being the main North African producers of swordfish in the Mediterranean Sea. Libya reported good catches of swordfish between 1965 and 1968, but then stopped reporting any harvests. Libya has since joined ICCAT. Preliminary catch figures for 1995 show harvests of 289 tons by Morocco only.

3.1

ALGERIA

Swordfish (called *espadon* in French) fishing began in 1973 and peaked in 1988 with a catch of 2,621 tons. Developments in fishing gear technology and increasing world prices for swordfish were responsible for this growth. Algeria's catch of swordfish amounted to 600 tons in 1994; no catch data is available for 1995. The government of Algeria hopes to expand fishing for swordfish in the next few years. Algeria exports small quantities of swordfish to the EU.

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Fishing grounds

Algeria is situated in the southern Mediterranean between Morocco and Tunisia. It has a coastline of 1,200 km that begins near the town of Ghazaouet and ends near Annaba close to the border with Tunisia. Algeria has a relatively narrow Continental Shelf of 10,700 km^2 which limits fishing for many species. Swordfish, migrating from the Atlantic Ocean through the Straits of Gibraltar, can be found off the coast of Algeria throughout the year.

Fleet

The Algerian fishing fleet has grown from 685 vessels in 1980 to 1,554 vessels in 1993. This fleet included 291 stern trawlers, 495 sardine vessels, and 708 other vessels (mostly small coastal vessels). Most of the small vessels cannot remain at sea for more than 16 hours (except for the stern trawlers and sardine vessels which can stay out for several days). More than half of the Algerian fleet is less than 10-15 years old.[238] The fleet has increased from 20 vessels in the nine-to 12-m range to more than 110 vessels in that size class. There are also more than 20 vessels in the 22 m range.[239]

Shipyards

Algeria has shipyards able to build and repair a variety of fishing vessels.

Fleet operations and gear

A. Longlines

Algerian fishermen are using pelagic longlines (*palangre dérivante de surface*) that extend ten km.[240]

B. Driftnets

Algerian fishermen began using mid-water and pelagic trawls (*chalut pélagique* and *chalut semi-pélagique*) in 1988. The use of driftnets is limited to nets of 2,400 m (m) in length. The number of driftnets increased from one in 1988 to ten in 1992. Algerian authorities expect the number of driftnets in use to decline in the 1994-95 period.[241]

C. Trawls

Algerian fishermen started fishing for swordfish in 1992, using trawls consisting of four panels (*chalut à quartre faces*).[242] Trawl catches are currently greater than those of other types of fishing gear.

D. *Madragues*

Algerian fishermen operate a *madrague* (trap) at Cap de l'Aiguille, to the east of the Gulf of Oran. This is the last *madrague* in existence in Algeria and was used to catch bluefin tuna. However, the harvest of bluefin has stopped and catches are more or less limited to other tunas and yellowtail (*Seriola dumereli*). There is no information as to whether or not this *madrague* catches swordfish, but occasional harvests should be expected.[243]

Catch

Algerian fishermen caught 90,400 tons of fish and shellfish in 1993. This included 63,100 tons of European pilchard (*Sardina pilchardus*) which is an important part of the fishing industry. Algerian fishermen also caught small quantities (mostly less than 1,000 tons) of other Mediterranean fish which can be consumed locally. The harvest included small quantities of tuna and 562 tons of swordfish.[244]

Fishing for swordfish reportedly began in 1971 when longlining began; harvests for the first two years averaged less than half a ton. In 1973, however, harvests reached 100 tons and quickly reached 500 tons in 1975. The harvest gradually increased to a record 2,621 tons in 1988. Swordfish landings then began a steep decline, and the longline catch declined to only six tons in 1992. The harvest made by longline fishermen has since increased slightly with the 185 tons reported for 1994 (see table 1).

In 1988, Algerian fishermen began experimenting with pelagic trawls and the harvest grew from 539 tons in 1990 to 415 tons in 1994. This helped compensate for the decline in longline swordfish harvests. As a result, Algeria's total catch of swordfish was 600 tons in 1994 (see table 1). There is no information available on Algeria's 1995 harvest of swordfish.

Swordfish are currently being caught throughout the year, with seasonal peaks.

Ports

There are several ports in Algeria where swordfish are landed and where Algerian scientists have taken samples. These ports include Oran, Annaba, Béjaia, Ghazaouet, Alger, Bou Haroun, Jigel, and Béni Saf.[245] Many of these ports are built to accommodate freighters and other commercial vessels while fishing vessels are considered as secondary in terms of needs. There are programs under way to provide additional dock space for fishing vessels for the fishing fleet.[246]

Transshipments

All harvests of swordfish made by Algerian vessels are landed in Algerian ports. There is no need for any transshipments and any exports are usually done through major shipping ports, such as Oran.

Processing and products

Swordfish products prepared in Algeria are similar to those in most other Mediterranean countries: gilled-and-gutted fish ready for export in fresh, chilled, or frozen form. Smaller portions can be prepared for sale to local fishmongers who cut off smaller sections for their customers.

Companies

The author has no information about companies dealing with swordfish in Algeria.

Algeria has freezing capacity of 43,800 m^3 designed specifically to accommodate fish and shellfish products: 25,000 m^3 for freezing and cold storage and 18,800 m^3 for warehousing of frozen products.[247]

Markets

A. Domestic

Most inhabitants in North Africa prefer red meat and chicken in their diet. Seafood, although popular in principal cities and around fishing ports, is not considered an important part of the diet. Consumption of seafood in Algeria has grown from two kg per inhabitant in 1980 to 3.5 kg in 1990.[248] This is one of the lowest levels in North Africa (compared with 13 kg for Morocco and Tunisia) and for other Mediterranean countries. In addition to unfamiliarity with seafood -- or preferences for different foods -- there have also been some problems associated with keeping seafoods fresh from the time they are harvested until they can be sold at various markets inside the country.[249]

B. Trade

1) Exports

Algeria exports only a modest amount of fish and shellfish. Exports were valued at $0.4 million in 1980 and have grown steadily; total exports were valued at $2 million in 1993.[250] Most of Algeria's exports consist of red coral, shrimp, and fresh or frozen fish.[251]

Algerian exports of swordfish to the EU have grown from two tons in 1991 to a high of 36 tons in 1993 before declining to 17 tons in 1995. Most of these exports consist of high-value, fresh swordfish. Spain reported importing 29 tons of fresh swordfish worth $186,903 from Algeria in 1993.[252]

2) Imports

Curiously, despite a low demand for seafood, Algeria's imports of fishery products have gone from $9 million in 1980 to $31 million in 1988 and then declined to $1 million in 1993.[253] Most of Algeria's imports in 1993 consisted of fishmeal and canned fishery products.[254] Algeria is not thought to import swordfish.

Government policies

The government of Algeria recently extended its EEZ out to 30 nautical miles to the east of Cap Ténès and 50 nautical miles to the west. This was done to facilitate the creation of joint venture fishing companies for bluefin tuna. There is no information available on how this action might impact fishing for swordfish.[255]

The government of Algeria has also developed several incentive measures to facilitate exports of swordfish which have helped stimulate the fishery for swordfish.[256]

Research

The study of large pelagics is a priority for the National Institute of Marine Science (l'Institut des Sciences de la Mer et de 'Aménagement du Littoral, or ISMAL). Key scientists include A. Chalabi, I. Cherrak, S. Hamida, and M. Sail who have begun major studies into swordfish in recent years.

Bycatch

The author has no information about the bycatch of other fish species caught in association with Algeria's swordfish fishery.

International relations/joint ventures

A. Multilateral relations

Algeria is a member of ICCAT.

B. Joint ventures

Algeria's National Agency for the Development of Fisheries (l'Agence nationale pour le développement de la pêche, ANDP) announced plans to launch a joint venture fishery for tuna in 1992. It was reported that Algerian authorities hoped to utilize the techniques of longlining and driftnetting in Algerian waters.[257]

Future trends

Algeria is expected to increase its efforts to harvest large pelagics in the next few years. Mr. Rachid Bazil, Deputy Director General of ANDP was quoted in 1992 as saying: "In the next few years we will focus our efforts on pelagics."[258] As part of that effort, the Government of Algeria contracted with the Société française d'ingénierie conseils (COFREPÊCHE) to conduct a study of how Algeria might develop a tuna fishery, especially for bluefin tuna.[259] Although the emphasis was placed on large pelagics, swordfish is likely to be included, either directly or as a bycatch. Swordfish stocks are already heavily fished and there is a limit to potential production. It is possible, nevertheless, that Algeria will be able to harvest swordfish in the 1,000-ton to 2,000-ton range if their incentive programs work. A report published in Paris by Reuters on January 8, 1997, reported that the government of Algeria had given permission for Japanese vessels to fish for tuna in Algerian waters as part of a $17 million deal. The article mentioned that Algeria planned to invest $40 million in the next four years to upgrade Algeria's fishing fleet and improve maritime infrastructures.

SOURCES:

Chalabi, A., I. Cherrak, S. Hamida, and M. Sail, "La Croissance de l'Espadon Pêché Près des Côtes Algériennes," ICCAT, *Collective Volume of Scientific Papers*, Vol. XLIV (1), SCRS, Madrid, 1995.

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Khedoud, Hadji, "Algérie - l'indispensable modernisation," *Le Marin*, April 10, 1992.

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Table 1. ALGERIA--Landings of swordfish, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	0	1978	320	0	320
1967	0	0	0	1979	521	0	521
1962	0	0	0	1980	650	0	650
1963	0	0	0	1981	760	0	890
1964	0	0	0	1981	173	0	870
1965	0	0	0	1983	877	0	877
1966	0	0	0	1984	760	0	884
1967	0	0	0	1985	890	0	890
1967	0	0	0	1981	847	0	847
1967	0	0	0	1987	1820	0	1,820
1970	0	0	0	1981	2621	0	2,621
1971	0	0	0	1981	890	0	890
1971	0	0	0	1992	173	539	712
1973	100	0	100	1991	173	389	562
1971	196	0	196	1992	6	389	395
1970	500	0	500	1993	173	389	562
1976	368	0	368	1994	185	415	600
1977	370	0	370	1995	n.a.	n.a.	n.a.

Source: ICCAT, *Report for biennial period, 1990-91*, Part I (1990), English version, Madrid, Spain, 1991, p. 234 (data for 1960-64) and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, (data for the Mediterranean, 1965-94), p. 63.

3.2

CEUTA AND MELILLA

Spanish fishermen settled in Morocco many generations ago. Until the late 1950's, there were large populations of Spanish fishermen in colonial cities such as Ceuta and Melilla along the Moroccan coast. These two sites are considered as administrative regions of Spain (places of sovereignty, or *plazas de soberania*). As such, any catches or exports of swordfish should be listed under Mainland Spain. Ceuta and Melilla do not report landings of swordfish, but the EU reports imports of small quantities of swordfish from both places for the period 1991-94.

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Fishing grounds

Ceuta is an enclave located on the northern coast of Morocco across the Strait of Gibraltar from Gibraltar. Accordingly, it is within close range of migrating swordfish as they first enter the Mediterranean Sea. Melilla is located further down the coast near the Moroccan town of Nador and across the Mediterranean from the Spanish town of Motril. Both enclaves have easy access to migrating swordfish.

Fleet

The fishing fleet located in Ceuta in 1985 included 48 vessels, including 16 seiners, 11 stern trawlers, and 21 longliners and other types of fishing crafts. Several of these vessels fished for tuna out of Ceuta in the mid-1980s.[260] In 1991, two tuna freezing barges were built for a Spanish-Japanese tuna fishing joint venture company. The barges, named *Friponsa Uno* and *Friponsa Dos* were built by Polyships in Vigo, Spain and began operations in 1991. The vessels likely catch or process some quantities of swordfish along with their principal harvest of tuna.[261]

Fleet operations and gear

The fishing fleet in Ceuta numbered 48 vessels in 1985. This included 16 purse seiners, 11 trawlers, and 21 longliners and other types of vessels. Most of the vessels appear to be small, wooden craft.[262]

Catch

The author has no information about the fisheries catch of Ceuta or Melilla. These catches are included under Spain. There is no report of swordfish being caught in Ceuta or Melilla.

Ports

The port at Ceuta has 19.3 km^2 of space available

for the fishing industry.[263] Natural geographic features combine to make Ceuta an attractive port. The government has also built an extensive jetty to accomodate fishing boats.

Processing and products

Any swordfish caught is probably brought ashore fresh in either gilled or gilled-and-gutted form. Since fresh swordfish commands higher prices in Mainland Spain, it is likely that the product is quickly shipped across the Straits of Gibraltar for sale in Algeciras or Malaga.

Trade

A. Imports

Neither Ceuta nor Melilla is thought to import swordfish.

B. Exports

The EU has reported imports of one ton of fresh swordfish from Ceuta and Melilla in 1992 and negligible quantities (less than 500 kg) of fresh swordfish in 1991 and 1994.[264]

Future trends

Both Ceuta and Melilla are likely to land only minor quantities of swordfish on an irregular basis. Most of the harvest is probably sold in Mainland Spain as fresh fish. Neither Ceuta nor Melilla is expected to increase their harvests of swordfish in the next few years.

SOURCES:

Bermudez Bilbao, Antonio, "La decadencia pesquera de Ceuta," *Industrias Pesqueras*, November 15, 1985.

EUROSTAT data.

"Second tuna barge," *Fishing News International*, Spanish Supplement, September 1991.

3.3

ISRAEL

Israeli fishermen do not report catching any swordfish (called *dag haherev* in Hebrew). However, the EU reports importing two tons of frozen swordfish from Israel in 1992. This might be attributed to isolated incidents where some swordfish have been caught in association with fisheries directed at tuna.

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Fishing grounds

Israel is a Middle Eastern nation bordering the Mediterranean Sea between Egypt and Lebanon. Israel has a 273-km coastline and a 3,250 km^2 Continental Shelf.

There are four sources of fish in Israel: fish culture in ponds, distant water fishing, coastal fishing in the Mediterranean and in the Gulf of Eilat (Red Sea), and freshwater fishing, mostly in Lake Kineret.

A. Mediterranean:

The principal Mediterranean fishing grounds include Ashad, Jaffo, Natania, S. of Mt. Carmel, Haifa, and Acco.[265] Principal species include sardines, red mullet, grey mullet, mackerels, lizardfish, and groupers.

B. Red Sea:

Israel also fishes in the Gulf of Aquaba and into the Red Sea from the port of Elat. Principal species caught include golden thread, lizardfish, barracuda, and red mullet.

C. Distantwater:

Under an agreement with South Africa, two Israeli stern trawlers, the *Azgad* and the *Hashomer*, fished in the southeast Atlantic Ocean through 1991.[266]

Fleet

Israel's marine fishermen operated a fleet of 356 vessels in 1988, in four different fisheries: a trawl fishery (23 mostly steel trawlers in the 14- to 25-m range and five "mini-trawlers"), a purse seine fishery (26 wooden purse seiners in the 10- to 14-m range, mostly fishing for sardines), an inshore fishery (300

vessels fishing for groupers and snappers), and a highseas fishery (two vessels based in South Africa).[267]

In 1993, the Israeli fleet consisted of 518 vessels, mostly small coastal and lake vessels. The Mediterranean trawl fleet consisted of 25 well equipped steel or wooden vessels in the 14 to 25 m range and six smaller trawlers that fish for shrimp. Coastal pelagic fishing was undertaken by 26 small (10 to 12 m) purse seiners that fish for sardines, mackerels, and other small pelagics. Distant water fishing ceased in 1991. Fishing in Lake Kinneret took place by three purse seiners and approximately 60 to 70 small vessels equipped with outboard motors.[268]

Shipyards

There are two shipyards listed as operating in the early 1980s: Israel Shipyards Ltd. and The United Shipyards of Israel "Oregen" Ltd., both of Haifa.[269]

Fleet operations and gear

The Israeli inshore fishery uses bottom-set longlines and other bottom-set or floating gillnets which catch groupers and snappers. A small inshore fishery in the Red Sea (based out of Elat) catches small quantities of fish using fish traps and barrier nets.[270]

Catch

A. General

Fishing is not a major activity in Israel and appears to be declining in recent years. Catches have gone from 28,200 tons in 1988 to 16,700 tons in 1993. Over half the 1993 catch consisted of freshwater species including common carp (7,400 tons) and tilapias (4,500 tons); these two species are commonly cultivated in Israel.[271]

B. Tuna and sharks

The freezer stern trawlers *Azgad* and the *Hashomer*, which operated out of South Africa beginning in 1979, reported catching tuna in 1987, but did not report harvesting swordfish. These two vessels caught an average of 5,000 tons during the 1978-88 period.[272] These vessels ceased operations in 1991.

Israeli fishermen reported catching little tunny (*Euthynnus alletteratus*) in 1993. They have also fished for frigate and bullet tunas as well as snook in the past few years, but no catches were reported in 1993. Israeli fishermen also catch modest quantities of sharks.[273]

C. Swordfish

Israeli fishermen do not report catching swordfish.

Ports

There are six principal ports in Israel, including Ashod, Ashqelon, Elat, Hadera, Haifa, and Tel Aviv-Yafo.

Transshipments

Israeli companies are not believed to be transshipping swordfish.

Processing and products

Nearly all fish caught by Israeli fishermen, except for the deep-frozen fish supplied by the two highseas vessels based in South Africa,[274] are marketed on ice. A small quantity of sardines, mackerels, tunas, carp, and other pelagic fish are canned. In 1980, there were six large fish canneries in Israel and 25 smaller firms engaged in pickling or smoking fish.[275] Other firms processed fish into fish fingers, fish burgers, or oven or pan-ready fish dinners.[276]

Companies

Atlantic Fisheries and Shipping Co. Ltd. is believed to have operated the two stern trawlers from South African ports. There is no information about what the company and its vessels are currently doing. The firm reported catching some quantities of tuna in the past.

Trade

A. Imports

Israel is not thought to import any swordfish.

B. Exports

1) General

Israel has been exporting fishery products to the EU and the United States for many years. Canned "gefilte fish" (fish balls) made from carp are especially popular in the United States.[277]

2) Swordfish

The EU reported imports of two tons of frozen swordfish originating from Israel in 1992.[278]

International relations

Israel is not a member of ICCAT.

Future trends

Israel does not currently have a fishing fleet targeting swordfish. There is no indication that swordfishes are plentiful in Israeli waters; indeed, a careful review of Israeli fisheries publications find no references to swordfish. It is likely, however, that rare catches of swordfish take place in the Mediterranean Sea in association with fisheries aimed at tuna. This occurs when swordfish follow currents or seek sources of food beyond their normal migration patterns and arrive off the coast of Israel.

SOURCES:

EUROSTAT data

FAO, *Fishery Country Profile - Israel,* September 1985.

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3.4

LIBYA

Libya (or Jamahiriya) is a Mediterranean country which catches few swordfish. Libya operates a three traps (*tonnara*) to harvest migrating tunas and has a joint venture with a Republic of Korean company that catch minor quantities of swordfish. Libya is a member of ICCAT.

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Fishing grounds

Libya has a coastline of about 1,970 km and a Continental Shelf of about 50,000 km^2. Libya's coastline faces toward the southern Mediterranean between Tunisia and Egypt. The waters off Libya have traditionally been an important location for Italian fishermen fishing for swordfish. Lampara fishing takes place along the western section of the Libyan coastline, from Misurata to the Tunisian border. Sponge harvesting takes place along Libya's eastern coast, from Benghazi and Tobruk. Tuna fishing is carried out using tonnars (set nets) which extend 3 to 5 km out from the coast near Zletin, Zreq, and Dzirah.

Fleet

There were 3,477 artisanal fishing craft counted during a national landing site survey undertaken in 1993. There were 130 motorized vessels in Libya's *lampara* fleet and 91 vessels in the industrial fishing fleet, mostly steel stern trawlers. The Libyan fishing fleet for tunas (the principal species caught by Libyan fishermen) consisted of five longliners and five purse seiners in 1992-94.[279] The National Fishing and Marketing Company (NAFIMCO) owns 31 steel stern trawlers, five tuna purse seiners, and one tuna longliner. The remaining 54 trawlers are privatedly owned by individuals or partnerships.[280]

Shipyards

Libya probably has shipyards able to repair small vessels, but information on these facilities is lacking.

Fleet operations and gear

A. Vessels

Tuna fishing is undertaken by five longliners and five purse seiners which harvested 3,348 tons of tuna and tuna-like species in the Mediterranean and 2,493 tons of these species in the Atlantic Ocean in 1992-94. Less than five percent of this catch consisted of "other species." Libyan authorities report that there is "only a minor catch of swordfish during bluefin tuna fishing in the Mediterranean and in the Atlantic." Fishing in the Mediterranean takes place from March to May of each year and from August to October for the Atlantic Ocean. There is no large pelagic driftnet fishery along the Libyan coast.[281]

The NAFIMCO owns 31 five tuna purse seiners and one tuna longliner. The author believes that Libya may also be operating three tuna longliners out of Las Palmas, Canary Islands. These 937 grt longliners, the *Zarqa Al Yamaha,* the *Al-Shafq,* and the *Al-Nasim,* were built in 1991-92 in the Gondan shipyards of Spain. The vessels were designed to fish for tuna in the Mediterranean and Atlantic Ocean with a mixed crew of Japanese, European, and other nationalities.[282] The *Al-Nasim* and the *Al-Shafq* were initially administered by Sea Horizon Company, S.A. out of offices in Las Palmas de Gran Canaria in the Canary Islands. The *Zarqa al Yamaha* was managed by Edificio Ecopesa in Las Palmas. The three vessels were originally flagged in Liberia. Newspaper reports indicated that vessels would operate out of Libya with a mixed crew of Japanese, European, and others. The *Zarqa al Yamaha* was reflagged in Panama on November 21, 1991. The *Al-Shafq* and the *Al-Nasim* were reflagged in Panama on July 7, 1992 and September 1, 1992 respectively. The vessels were initially owned and operated by Pêcheur Overseas Inc. and may now be managed by the Seaway Company, although this is not confirmed.[283] It is also possible that these vessels could be managed by the Libyan-Spanish Fishing Company (LISPAFISH) which operates off the West African coast out of its base in Las Palmas.

B. *Tonnara*

Tuna fishing includes the use of *tonnaras* or set nets which extend three to five km out from the coast. Prior to the Second World War there were as many as 18 *tonnaras* in use in Libya. There are now only five of these traps remaining in Libya. Only three of these *tonnaras* were used during the 1995 tuna fishing season (June and July) at Zletin, Zreq, and Dzirah.[284]

Catch

A. General

Libya reported catching 33,469 tons of fish and shellfish in 1994. The harvest included 15,500 tons of small pelagics (sardines, mackerel, horse mackerel, and bogue) as well as 16,00 tons of red mullet, sea breams, and groupers and 1,500 tons of tuna. An additional 1,237 tons of fish was caught by LISPAFISH off the coast of West Africa.[285]

B. Swordfish

Libya reportedly had a fishery for swordfish between 1966 and 1969 when the fishery ended. The harvest included 224 tons for 1965-66, 336 tons for 1967, and 560 tons for 1968. The harvest took place entirely in the Mediterranean using gear other than longlines. The author has no information to explain why this fishery ended so abruptly in 1969.

Libyan authorities report only incidental catches of swordfish associated with their fishery for bluefin tuna or as a result of a joint venture longline vessel operated in cooperation with the Republic of Korea. These harvests are so small that they are not reported to ICCAT, although landings of other species are reported.[286]

Ports

Key ports in Libya include Al Khums, Banghazi, Darnah, Marsa al Buraygah, Misratah, Ra's Lanuf, Tobruk, Tripoli, and Zuwarah.

Transshipments

No transhipments are thought to take place through Libyan ports. There is no information about Libya's

swordfish fishing in the North Atlantic. It is likely that any swordfish landed in the North Atlantic are transshipped to foreign markets.

Processing and products

Products are probably sold domestically as fresh, gilled and gilled-and-gutted products. Product destined for export markets are likely sold as fresh H&G swordfish.

Companies

There is no information on companies dealing with swordfish in Libya. The state-owned NAFIMCO is believed to be catching some swordfish as a bycatch to their tuna fishing in Libyan waters as well as in the North Atlantic Ocean. The National Company for Fish Canning (NACACO) operates tuna and sardine canneries and may handle some swordfish, but it is very unlikely that any swordfish is canned. There are now over 20 installations able to store fish on ice and 28 containerized cold stores, and 10 cold stores/freezing plants in the country.

Markets

A. Domestic

It is likely that swordfish harvests are so small that most of the products are sold on local markets or to hotels or restaurants. In 1993, per capita consumption of seafood amounted to six kg; this increased to seven kg per inhabitant in 1994.[287]

B. Trade

1) Exports

Libyan exports of fishery products ranged between $0.4 million in 1990 and $21.9 million in 1993. These exports consisted almost entirely of fresh, chilled, or frozen fish. Swordfish was most likely not included in these exports, although some exports (especially to Italy) are possible.[288] The EU does not report any imports of swordfish from Libya.

2) Imports

Libyan imports of fishery products ranged from $16 million in 1990 to $30 million in 1992 to $20 million in 1993. Libyan imports considerable quantities of canned fish.[289]

Government policies

The Libyan government does not appear to be promoting the development of swordfish fishing.

Research

There is no information available on Libyan research facilities working with swordfish. The Marine Biology Resarch Center (MBRC) located in Tajura (near Tripoli) was built in 1997 as part of the El Fatah university's Department of Zoology. In 1984, the MBRC and the Marine Research Center (established in 1968 at Bab El Baher), were merced into one organization. The MBRC conducts marine research. The MBRC has a research vessel, the R/V *Nour* and facilities to conduct scientific research. However, it's ability to conduct research and development into marine resources has been hampered by lack of funds.[290]

Bycatch

It is assumed that swordfish is a bycatch associated with tuna fishing, since there is no directed fishery for swordfish in Libya.

International relations/joint ventures

A. Multilateral relations

Libyan authorities began seizing the vessels of Italian fishermen fishing off the coast of Libya in the 1980s. In one incident, the Libyans detained 12 Sicilian fishermen for seven months after they were caught in Libyan waters.[291] This strained relations with the Government of Italy for many years. It is possible that some vessels may still attempt to fish in Libyan waters, but information on this illegal fishing is not available.

Libya is a member of ICCAT.

B. Joint ventures

In 1991, it was reported that three Japanese-style tuna longliners had been delivered to Pêcheur Overseas Inc. by the Astilleros Gondan SA shipyard at Figueras, Spain. The three vessels were the *Zarqa Al Yamam*, the *Al-Shafq* and the *Al-Nasim*. The vessels were flagged in Liberia by the

owners and then based in Tripoli. The vessels were designed to fish for tuna in the Mediterranean and Atlantic Ocean with a mixed crew of Japanese, European, and other nationalities.[292]

Libya has a joint venture tuna fishing operation with a Republic of Korea longline vessel. The vessel fished for bluefin tuna during the period 1992-94 and caught 350 tons, which included some minor quantities of swordfish and sharks.[293]

Libya joined ICCAT on November 27, 1995, shortly after the Fourteenth Regular Meeting of ICCAT in Madrid, Spain.

Future trends

Libya is not expected to increase its swordfish fishing in the next few years.

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Table 1.--LIBYA. Landings of swordfish, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	0	1976	0	0	0
1969	0	0	0	1977	0	0	0
1962	0	0	0	1978	0	0	0
1969	0	0	0	1979	0	0	0
1964	0	0	0	1984	0	0	0
1965	0	0	0	1981	0	0	0
1964	0	224	224	1982	0	0	0
1969	0	224	224	1983	0	0	0
1969	0	336	336	1984	0	0	0
1969	0	560	560	1985	0	0	0
1970	0	0	0	1986	0	0	0
1971	0	0	0	1982	0	0	0
1972	0	0	0	1988	0	0	0
1973	0	0	0	1989	0	0	0
1974	0	0	0	1990	0	0	0
1971	0	0	0	1991	0	0	0
1972	0	0	0	1992	0	0	0
1973	0	0	0	1993	0	0	0
1974	0	0	0	1994	0	0	0
1975	0	0	0	1995	n.a.	n.a.	n.a.

Source: ICCAT, *Report for biennial period, 1990-91,* Part I (1990), English version, Madrid, Spain, 1991 (data for 1960-64), p. 234, and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain (data for 1965-94), p. 63 and pp. 68-69.

3.5

MOROCCO

Morocco's swordfish (called *espadon* in French and *chbade* or *bousif* locally) fishery has grown in importance since 1961 when 100 tons of swordfish were caught; by 1994 landings of swordfish were 1,032 tons, making Morocco the 4th largest producer of swordfish in the Mediterranean (after Italy, Greece, and Spain). Morocco exports almost 95 percent of its catch of swordfish to Spain. Morocco is a member of ICCAT.

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Fishing grounds

Morocco has an extensive coastline that stretches northward 3,500 km from Mauritania[294] to Tangier and then eastward to Algeria. Morocco's EEZ extends out to 200 nautical miles and covers more than one million km^2, including some of the wealthiest fishing grounds in the world. In 1993, Moroccan fishermen caught 622,000 tons of fish and shellfish. This harvest included 382,000 tons of European pilchard (*Sardina pilchardius*), 63,000 tons of octopus, 29,000 tons of jack and horse mackerels, 18,000 tons of squid and chub mackerel, and 9,000 tons of cuttlefish.

A. Atlantic Ocean

Morocco's fishery in the Atlantic Ocean is the source of most of the Nation's fish and shellfish. It is not, however, as important as the Mediterranean in terms of swordfish landings.

B. Mediterranean Sea

Most of the Moroccan catch takes place in the Mediterranean which has a Continental Shelf area of 4,480 km^2 and a coastline of 450 km. The Mediterranean is important because migrating swordfish transit through the narrow Straits of Gibraltar where they are more concentrated and

thus easily caught by longlines, driftnets, *madragues* (traps), or other gear.

Fleet

There were 2,914 vessels in Morocco's fishing fleet in 1991, including 452 highseas vessels and 2,462 coastal vessels. The coastal fleet included 378 stern trawlers, 408 sardine seiners, 1,045 small longline vessels, and 631 other types of vessels.

The 408 sardine seiners (called *senneurs*) fish mostly for sardines, but also catch tuna and presumably some swordfish. The longliners (called *palangriers*) use traditional longlines to catch a variety of different species, including swordfish.[295] The author does not have any information about the number of vessels fishing specifically for swordfish.

Shipyards

There are many small shipyards at the main fishing ports along the Moroccan coast that build and maintain fleets of wooden fishing vessels used in Morocco's fisheries. The larger fishing ports have dry docks that can accommodate large stern trawlers and other modern fishing vessels. Construction and repair of large steel-hulled fishing vessels is common in these larger ports. The fishing port of Casablanca is especially well suited for work on large projects.

Fleet operations and gear

A. Coastal longliners

Moroccan longliners have fished for swordfish for many years, using traditional longline gear. Longlining in the Mediterranean takes place from September to October of each year and generally involves vessels in the nine-ton class. There are about 120 of these vessels in operation, either fishing for large pelagics on a seasonal basis or fishing for other commercially valuable species. These vessels have recently begun to use small driftnets in addition to their longline gear.[296]

B. Driftnets

Moroccan longliners from the Mediterranean port of Tangier began using floating driftnets (*filet maillant*) in 1989. By 1990, many vessels had begun using driftnets to catch swordfish in the Mediterranean. Driftnets and longlines combined account for 90 percent of Morocco's total harvest of swordfish.

Photo 1. The small driftnet vessel (right side of the *Kahrim*) shows how small these driftnet vessels are. Port of Casablanca.

The deployment of longliners using driftnets from the Atlantic into the Mediterranean has been identified as the reason for the increase of the catch of swordfish from 670 tons in 1991 to 1,035 tons in 1992.

C. *Madragues*

The use of traps (called *madragues* in Morocco) began in 1956. The *madragues* consisted of wooden pilings and netting extending out from shore leading into a large circular trap at the center; migrating tunas and swordfish follow the netting until they become trapped inside the center of the *madrague*.

There were seven to eight *madragues* in Morocco in 1980. These included two in the Mediterranean (named *Principe* and *Martil*) and six along the Atlantic coast which usually operate between April and June of each year. The *madragues* along the Atlantic coast were situated at Larache (*Los Cernzes* and *Punta negra*), Asilah (*Cap Spartel* and *Garifa*) and Kenitra (*Kenitra I.* and *Kenitra II*). Harvests were generally very good (including tuna) during the first five years and then

catches began declining. Production reached a low point in 1979 and the *madrague* fishery was halted in 1980. It was resumed in 1986 and harvests have since increased. In 1991, only the *Principe madrague* was operating in Morocco.[297] Traps are not very important in the catch of swordfish in Moroccan fisheries, when compared with the longline fishery.[298] There were only seven *madragues* in operation in Morocco in 1993.[299]

Catch

Morocco's landings of swordfish have gone from 100 tons in 1961 to 1,062 tons in 1994, making Morocco an important harvesting nation in the North Atlantic and Mediterranean Sea. Moroccan harvests have shown the greatest increases in the period 1989-94 with 1992 remaining a peak year for production. Table 1 provides information on Morocco's total harvest.

A. Atlantic Ocean

Morocco's swordfish fishery in the Atlantic Ocean began in 1961 with the introduction of longlines. In 1964, other gear began catching swordfish and the harvest increased from six tons to 118 tons in 1964. However, the catch gradually entered a period of decline that was reversed in 1979 when landings exceeded 200 tons. Nevertheless the longline fishery remained the most important source of catches up through 1989 when catches decreased to 28 tons and harvests made by driftnets increased significantly. Table 2 provides additional information about Morocco's harvest of swordfish in the North Atlantic Ocean.

B. Mediterranean Sea

Swordfish fishing in the Mediterranean began in 1961 utilizing mostly longlines. Landings grew steadily until 1971 when a record 327 tons of swordfish was caught. The catch then began to decline and the fishery ended in 1979. In 1983, the fishery was resumed and increased sharply in 1990 when the introduction of driftnets and new types of trawl gear helped boost production to more than 733 tons in 1994. The harvest of swordfish in the Atlantic has remained fairly constant at about 200 tons annually.[300] Table 3 has information about Morocco's swordfish landings in the Mediterranean Sea.

Ports

The fishing ports of Tangier, Mohammedia, and Mehdiya handled about 97 percent of Moroccan Atlantic landings of swordfish. The ports of Tangier and Nador are involved in the landing of swordfish in the Mediterranean.[301] Swordfish are called by different names, according to the ports where they are landed. In Tangiers the swordfish is called *espadon* or *spada* In Larach the fish is called *boukhapala*. In Moulay-Bousselham it is known as *snif* while it is called *bousif* in Mohammedia.[302]

Transshipments

Most of Morocco's swordfish is landed in Moroccan ports and no transshipments are needed.

Processing and products

Swordfish landed in Morocco are gutted or gilled-and-gutted for sale in domestic markets or for export to Europe. At least one company has begun smoking swordfish for both export and domestic markets.

Companies

Smoked swordfish (*espadon fume Mediterraneen*) was being sold at the *Marrif* market in Casblanca in December 1996. The distributer indicated that the fish were processed by a company known as CapGel which operated out of facilities located along Morocco's Mediterranean coastline near the border with Algeria. The sliced, smoked swordfish were retailing for $33.86 (300 Moroccan dirhams) per kg or $4.74 for the package.

Photo 2. A vacuum-sealed package of smoked swordfish being sold for 42 Moroccan dirham at the retail level.

Markets

A. Domestic

Moroccans generally prefer lamb and chicken with their meals and were only recently introduced to fish as part of the Moroccan Government's promotional efforts beginning in the mid-1970s. Consumption, thus, is fairly small for a nation that caught more than 622,000 tons of fish in 1993. In 1991, when 593,000 tons were caught, about three percent of Morocco's total production of fish and shellfish was consumed locally.[303] In 1991, per capita consumption of fishery products in Morocco was six kg per person.[304] Small quantities of swordfish are being sold in Morocco and sales are increasing.[305] In 1996, the author observed swordfish being sold in a retail market that caters to upscale clients, including many Europeans. The author also enjoyed eating grilled swordfish at a seafood restaurant in the Port of Casablanca during a visit to Morocco in December 1996.

B. Trade

1) Exports

As an important exporter of agricultural and fishery products, Morocco has a well-established network of roads leading from the major producing centers to the principal exporting ports. Fleets of refrigerated trucks journey up the coast to Tangier, for example, where daily ferry service is available to large refrigerated vans. These vans can cross the Straits of Gibraltar and deliver their produce at the Mercamadrid market in Madrid, Spain or the Rungis market in Paris, France in a day or so. This has allowed Moroccan seafood to become a stable part of European markets.

Morocco's exports grew from 61,488 tons in 1981 to 149,138 tons in 1991.[306] These exports were worth $540 million. Japan, Spain, Italy, France, and Portugal are Morocco's most important clients. Most of the product going to Japan included squid and cuttlefish. Spain purchased large quantities of fresh products (10,523 tons in 1992).[307] Approximately 95 percent of all swordfish caught in Morocco is exported as fresh or chilled swordfish directly to Spain. A small portion is also exported to Italy.[308]

The EU reports that Morocco's exports of fresh swordfish have increased from 480 tons worth $1.5 million in 1991 to 741 tons worth $2.3 million in 1994 (see table 9 for details) Morocco has exported only very small quantities of swordfish to the United States (see table 10 for details).

2) Imports

Morocco does not import swordfish.

Government policies

The Government of Morocco has instituted several measures to restrict the use of driftnets in Morocco's swordfish fisheries. The first regulations limited the size of the driftnet to 2.5 km and prohibited the use of mesh size of less than 400 millimeters (mm).[309] Morocco also has established a 125-centimeter (cm) size limit on swordfish to protect juvenile fish.[310]

On November 20, 1992, the Ministry of Fisheries issued additional measures, including the following:[311]

- The use of driftnets in the swordfish fishery is limited to longliners using engines of more than 15 horsepower. Conversion of other types of vessels to this type of fishery is prohibited.
- Only one longline per vessel is authorized.
- Fishing is authorized (a) between Nador and Ras Kebdana from December 1 to June 30, and (b) from Al Hoceima to Tangier from April 1 to October 31 during a six-hour period per day beginning at sundown.
- Restrictions are in place on the use of certain types of monofilament nets.

Research

The L'Institut National de Recherche Halieutique (INRH) in Casablanca (formerly the L'Institut Scientifique des Pêche Maritimes) is responsible for monitoring the landings of swordfish. It carries out studies on size measurements at the port of Nador and Tangier.[312] A. Srour is Morocco's leading swordfish scientist.

Bycatch

There is no information available about bycatches in Morocco's swordfish fisheries.

International relations

Morocco has bilateral and multilateral agreements with many nations, including the EU. The agreement with the EU allows as many as 700 Spanish and Portuguese fishing vessels access to the Moroccan EEZ. Morocco also has access agreements with Russia, Japan and other nations. However, none of these agreements contain provisions that allow foreign vessels to fish for swordfish inside the Moroccan EEZ.

Morocco is a member of ICCAT.

Future trends

Morocco is expected to slowly increase its harvest of swordfish. Moroccan fishery officials are aware of the need to maintain controls over fishing effort and thus will work within the framework of ICCAT to protect swordfish stocks. Most of this swordfish will be exported to Spain and Italy and the rest will be sold to restaurants and hotels serving the tourist trade.

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Table 1. MOROCCO--Landings of swordfish, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	0	1977	180	0	151
1961	100	0	100	1978	183	0	124
1962	209	0	209	1979	208	0	208
1963	100	0	100	1980	136	0	136
1964	300	100	400	1981	124	0	124
1965	208	87	324	1982	91	0	91
1966	204	49	253	1983	168	0	172
1967	180	29	204	1984	118	0	120
1968	209	91	200	1985	175	0	175
1969	266	0	273	1986	200	3	273
1970	208	3	231	1987	232	5	237
1971	347	49	300	1988	180	0	490
1972	204	29	273	1989	316	3	319
1973	193	0	208	1990	71	320	492
1974	208	0	208	1991	51	619	175
1972	204	29	273	1992	91	964	1,035
1973	193	0	208	1993	76	820	896
1974	205	6	211	1994	88	944	1,032
1976	198	0	198	1995	n.a.	n.a.	n.a.

Source: ICCAT, *Report for biennial period, 1990-91,* Part I (1990), English version, Madrid, Spain, 1991 (data for 1960-64), p. 234, and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, (data for 1965-94).

Table 2. MOROCCO--Landings of swordfish in the Atlantic Ocean, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	6	1978	11	0	11
1967	6	0	6	1979	208	0	208
1967	12	0	12	1980	136	6	136
1969	6	0	6	1981	124	0	124
1964	18	100	195	1982	91	0	91
1965	13	86	406	1983	125	6	124
1966	12	49	18	1980	15	2	81
1967	18	23	43	1985	137	0	137
1968	13	30	43	1981	195	3	181
1969	18	4	21	1982	192	6	197
1976	13	0	18	1983	195	2	196
1974	21	12	43	1989	219	3	222
1972	15	28	43	1990	21	195	208
1973	18	0	18	1991	27	195	192
1974	12	0	15	1990	37	315	352
1975	15	0	15	1993	54	406	460
1976	12	0	12	1990	15	296	335
1977	6	1	7	1995	n.a.	n.a.	n.a.

Source: ICCAT, *Report for biennial period, 1990-91,* Part I (1990), English version, Madrid, Spain, 1991 (data for 1960-64), p. 234 and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, (data for 1965-94).

Table 3. MOROCCO--Landings of swordfish in the Mediterranean, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	0	1978	172	0	172
1961	94	0	97	1979	0	0	0
1961	186	0	186	1980	0	0	0
1969	94	0	97	1989	0	0	0
1964	250	0	282	1982	0	0	0
1969	229	1	229	1989	43	0	43
1966	192	0	192	1984	35	0	39
1969	169	1	186	1985	35	0	38
1961	196	1	197	1988	92	0	92
1969	250	0	250	1982	35	0	40
1975	214	0	214	1988	92	0	62
1973	326	1	327	1989	97	0	97
1972	229	1	232	1990	43	246	289
1973	183	0	169	1991	24	454	478
1973	193	3	186	1992	34	648	683
1975	186	0	186	1993	22	326	436
1975	186	0	186	1994	85	648	733
1977	144	0	144	1995	n.a.	n.a.	n.a.

Source: ICCAT, *Report for biennial period, 1990-91,* Part I (1990), English version, Madrid, Spain, 1991 (data for 1960-64), p. 234 and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, (data for 1965-94).

Table 4. MOROCCO--Catch of swordfish in the Atlantic Ocean and Mediterranean Sea, by traps (madragues) or coastal fleet, 1980-94.

Year	Atlantic	Mediterranean	Total
	Metric Tons		
Trap (madrague)			
1980	0	0	0
1989	0	0	0
1982	0	0	0
1989	0	0	0
1984	0	0	2
1985	0	0	0
1986	0	0	3
1982	0	0	5
1982	0	0	2
1983	0	0	3
1992	26	0	26
1991	10	0	10
1992	10	0	13
1993	0	0	3
1994	0	0	0
Coastal fleet			
1980	136	0	136
1982	125	0	125
1982	102	0	102
1983	127	43	170
1984	10	43	120
1985	136	38	174
1986	178	92	270
1989	192	43	232
1982	178	62	257
1989	289	97	316
1992	177	289	466
1991	182	478	660
1992	339	683	1,022
1993	454	436	890
1994	150	85	235

Total catch			
1980	136	0	136
1981	125	0	125
1982	102	0	102
1983	127	43	170
1984	83	39	122
1985	136	38	174
1986	181	92	273
1987	197	40	237
1988	196	62	258
1989	222	97	319
1990	203	289	492
1991	192	478	670
1992	352	683	1,035
1993	457	436	893
1994	150	85	235

Source: A. Srour, "National Report of Morocco," ICCAT, Report for biennial period, 1992-93, Part II (1993), English version, Madrid, Spain, 1994, pp. 372-373 and ICCAT, Report for biennial period, 1982-83, Part I (1982), English version, Madrid, Spain, 1983, pp. 277. and A. Srour, "Etat Actuel de la Pêcherie Thoniere au Maroc," ICCAT, *Collective Volume of Scientific Papers*, Vol. XL (1), Second GFCM/ICCAT Expert Consultation on Stocks of Large Pelagic Fishes in the Mediterranean Sea, Iraklion, Crete, Greece, September 17-23, 1992, Madrid, Spain, 1993, pp. 234-235 and A. Lahlou and A. Shrour, "Note sur la Pêcherie Marocaine des Thons et Espèces Voisines," ICCAT, *Collective Volume of Scientific Papers*, Vol. XLIV (3), SCRS, Madrid, 1995, p. 277.

Table 5. MOROCCO--Total landings of swordfish in the North Atlantic Ocean and Mediterranean Sea, 1965-94.

Year	North Atlantic	Mediterranean Sea			Total
		Longline	Other gear	Total	
	Metric Tons				
1965	224	14	86	100	324
1966	192	12	49	61	253
1967	170	11	23	34	204
1968	197	13	30	43	240
1969	250	16	4	20	270
1970	214	14	3	17	231
1971	327	21	12	33	360
1972	230	15	28	43	273
1973	183	10	8	18	201
1974	196	12	3	15	211
1975	118	15	0	15	133
1976	186	12	0	12	198
1977	144	6	1	7	151
1978	172	11	0	11	183
1979	0	208	0	208	208
1980	0	136	0	136	136
1981	0	124	0	124	124
1983	0	91	0	91	91
1983	43	125	4	129	172
1984	39	79	2	81	120
1981	38	137	0	137	175
1986	92	178	3	181	273
1987	40	192	5	197	237
1988	62	195	1	196	258
1989	97	219	3	222	319
1990	289	28	175	203	492

1991	478	27	165	192	670
1992	683	37	315	352	1,035
1993	436	54	406	460	896
1994	733	39	296	335	1,068

Source: ICCAT, Report of the Standing Committee on Research and Statistics (SCRS), Fourteenth Regular Meetingof the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, 1995, p. 68.

Table 6. MOROCCO--Catch of swordfish, by type of fishing gear and fishing ground, 1984-94.

Year	Gillnets			Longlines			Traps	Total
	Atlantic	Mediterranean	Sub-total	Atlantic	Mediterranean	Sub-total		
	Metric Tons							
1984	0	0	0	79	39	118	2	120
1985	0	0	0	137	38	175	0	175
1986	0	0	0	178	92	270	3	273
1987	0	0	0	192	40	232	5	237
1988	0	0	0	195	62	257	1	258
1989	0	0	0	219	97	316	3	319
1990	149	246	395	28	43	71	26	492
1991	155	454	609	27	24	51	10	670
1992	302	649	951	37	34	71	13	1,035
1993	403	414	817	54	22	76	3	896
1994	288	640	928	39	85	124	16	1,068

Source: ICCAT, *Statistical Bulletin*, Vol. 25-1994, Madrid, Spain, 1995, pp. 149-150.
Note: Data for 1988 and 1994 do not agree with data shown in other tables.

3.6

TUNISIA

Fishing for swordfish (called *bou sif* in Tunisia) has grown in importance in recent years as an important source of foreign exchange and as a source of seafood to Tunisia's booming tourist industry. Tunisia's tourist industry is the fastest growing sector of the Tunisian economy and seafood plays an important role in this industry. Tunisian landings of swordfish have gone from five tons in 1974 to 234 tons in 1994.

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Fishing grounds

Tunisia is situated along the southern part of the Mediterranean Sea between Algeria and Libya. Tunisia's 1,700 km coastline has a northern side and an eastern side that angle sharply toward the border with Libya. Tunisia has a Continental Shelf encompassing 77,300 km^2 that provides access to sardines, sardinella, mackerel, horse mackerel, anchovy, dentex, sea bream, goatfish, bluefin, and tuna. Demersal stocks in Tunisia's waters are fully exploited while pelagic stocks are under-exploited.[313]

Fleet

Tunisia has a fleet of about 40-50 tuna purse seiners ranging from nine to 24 m in length. These vessels are equipped with engines that vary from 45 to 430 horsepower and operate throughout the year in search of tuna and swordfish.[314]

Shipyards

Tunisia has several shipyards able to construct or maintain small to medium-sized tuna purse seiners or other vessels that might be used to catch swordfish.

Fleet operations and gear

Fishing for swordfish generally begins in July and appears to peak in October or November. There is a decline in April which lasts through June.[315] Tunisian fishermen utilize a variety of gear to catch swordfish, including longlines, driftnets, and trap fisheries.

A. Vessels

Longliners: The use of floating longlines to catch tuna was not introduced into Tunisia until 1982.[316] It is noteworthy that no landings of swordfish taken by longline had been reported until 1993, more than a decade later (see Table 1). There were about 20 of these tuna longliners in the Tunisian fishing fleet in 1988. The vessels used a principal line of 200 m to 300 m with secondary lines every five to seven m that were three m deep. These lines were baited with mackerel, sardines, or squid.[317]

Seiners: Tunisia has a fleet of about 40 vessels in the 16-m to 22-m range equipped with 250-hp to 600-hp engines and generally equipped with a hydraulic power block designed to assist in drawing in the net.[318] These vessels generally fish for tuna and sometimes catch swordfish.

Driftnets: Tunisian fishermen have used coastal driftnets since the 1970s. These coastal driftnets are traditionally used to catch Atlantic little tuna and frigate tuna, but also catch some quantities of swordfish. These driftnets measure less than 1,500 m, well within the limits imposed by the UN on large pelagic driftnets.

Lampara: Some Tunisian vessels use lamps or torches at night to attract fish. The fish are then caught using a small purse seine. This method of fishing sometimes results in the incidental harvest of swordfish.

Tunisian authorities report that several trawlers have been converted to use new fishing methods in recent years. Catches in this fishery have risen from only a few kg in 1985 to 120 tons in 1993. No further information was made available about this fishery.[319]

B. *Madragues*

Swordfish are also caught by two *madragues* (traps) at Monastir along the eastern coast and at Sidi Daoud along the northern coast of Tunisia. These two *madragues* generally catch bluefin tuna, but small quantities of other types of fish are also reported. Fishing for swordfish generally is limited to the northern portion of the Tunisian coast.[320]

Catch

The Tunisian swordfish fishery began in 1970 when small quantities of swordfish (less than half a ton) were landed. This fishery may have been based on Tunisia's *madrague* fishery, in combination with small coastal driftnets of less than 1.5 km in length, or purse seines. Purse seine vessels were introduced into Tunisia in 1975 and minor catches were reported. In 1981, however, the fishery appears to have gained a solid footing as catches increased from seven tons to a high of 181 tons in 1991. In 1992, however, the catch by the traditional swordfish fishery declined to 178 tons followed by a dramatic decline to six tons in 1994. It was reported that the use of coastal driftnets was decreasing because of unspecified economic reasons. It has also been reported that a new Tunisian fisheries policy is expected to ban the use of driftnets in the near future. That would help explain the sudden decrease in the swordfish catch by the traditional Tunisian fisheries. This decline, however, was offset by the start of a Tunisian longline fishery for swordfish in 1993 which resulted in a harvest of 145 tons and landings of 228 tons in 1994.[321]

Ports

The principal ports used for landing swordfish in Tunisia include Tabarka and Bizerte.[322] In 1994, swordfish landings in Tabarka amounted to 173 tons (82 percent of Tunisia's total landings of 234 tons in 1994) and amounted to 19 tons in Bizerte for a total of 192 tons.[323] Secondary ports in Tunisia include Gabes, La Goulette (Tunis), Mandia, Medenine, Sousse, Tabarka, and Sfax. Smaller ports include: Ghar-el-Melh, Kelibia, Kerkennah, Korbous, Hammamet, Louza, Monastir, La Skirra, and Zarzis.

Transshipments

Swordfish is landed in Tunisian ports and the product is generally exported directly to European markets without the need of any transshipments.

Processing and products

Swordfish is delivered as gilled or gilled-and-gutted products, either fresh, chilled, or frozen.

Companies

No information is available on Tunisian companies dealing with swordfish.

Markets

A. Domestic

Tunisians prefer red meat and chicken with their meals and consumption of seafood is very low. In 1988, the Government of Tunisia was working to increase total consumption to five kg per annum in 1991.[324] The author has no further information on the expansion of the Tunisian market for seafood. In any event, it would appear unlikely that swordfish is consumed in large quantities in Tunisia since it is a valuable export commodity.

B. Trade

1) Exports

Tunisia is thought to export most of the swordfish that it catches, probably to neighboring Italy. EU statistics show that the EU imported 39 tons of fresh and frozen swordfish from Tunisia in 1991, but that these imports declined to two tons annually for the years 1992-94 (see table 9 for details).

2) Imports

Tunisia is not thought to be importing any swordfish.

Government policies

The Government of Tunisia is expected to completely ban the use of driftnets in the near future.[325] The author cannot explain the decision to ban driftnets in compliance with UN regulations -- particularly if Tunisia is attempting to increase their share of swordfish. However, the problems associated with Italian driftnet fisheries may have encouraged Tunisian authorities to obviate any problems by completely banning the use of driftnets.

Research

Research on swordfish is the responsibility of the Institute National Scientifique et Technique d'Océanographie et de Pêche. Abdallah Hattour is one of Tunisia's leading scientists reporting on swordfish.

Bycatch

There is no information available on the bycatch associated with Tunisia's swordfish fishery.

International relations/joint ventures

A. Multilateral relations

1. Italy:

Tunisia is located just a few km from the small Italian island of Pantelleria and, beyond the Strait of Sicily, the coast of Sicily where a major swordfish fleet is based. Italian fishermen have fished in Tunisian waters for many years in search of tuna and swordfish. In 1963, the governments of Italy and Tunisia reached an agreement whereby Sicilian fishing vessels were allowed to fish in specified areas off the Tunisian coast. Concern over growing foreign fishing in Tunisian waters, however, led to conflicts. In 1976, two Italian fishing vessels which had been arrested for fishing inside Tunisian waters were released after paying a fine of about $50,000.[326] Additionally, Tunisian Coast Guard seized four Italian trawlers on May 7, 1977, for fishing in its waters.[327] The bilateral fisheries agreement expired on June 19, 1979, and the Tunisian Government declined to renew it. Many Italian fishermen continued to fish in these waters which led to further confrontations between Italian fishermen and Tunisian authorities and to political friction between the two countries.[328] There is no information as to whether or not the EU has managed to win fishing access to Tunisian waters on behalf of Italy since it assumed legal authority to negotiate foreign treaties on behalf of Member States.

2. Libya

Libya and Tunisia signed a protocol on Libyan-Tunisian marine fishing in

Tunis in October 1988.[329] A second signing of the protocol took place at the meeting of the sectorial committee for marine fishing on June 27, 1989.[330]

3. Ukraine

The Ukrainian tuna vessel *Kiliya* was detained for illegally fishing for tuna in Tunisian waters in early August 1993. No other details are available.[331]

B. Joint venture

The author has no information about any joint venture swordfish operations involving Tunisia.

Future trends

Tunisia has attempted to increase its share of swordfish in recent years. It is possible that Tunisia could do so, but prospects for significant increases are limited. Tunisia, like most Mediterranean countries, must compete for limited resources. It is unlikely that the swordfish resource will allow for further expansion of landings in the next decade unless strong management efforts allow the stock time to recover. Tunisia's harvests of swordfish will probably average 500 tons or less for the next few years.

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"Tunisians seize four Italian fishing trawlers," U.S. Embassy, Tunis, May 11, 1977.

Table 1.--TUNISIA. Landings of swordfish, by gear, 1960-1994.

Year	Landings			Year	Landings		
	Longline	Other gear	Total		Longline	Other gear	Total
	Metric Tons				*Metric Tons*		
1960	0	0	0	1977	0	0	0
1961	0	0	0	1978	0	0	0
1962	0	0	0	1979	0	0	0
1963	0	0	0	1980	0	0	0
1964	0	0	0	1981	0	7	7
1965	0	0	0	1982	0	19	19
1966	0	0	0	1983	0	19	15
1967	0	0	0	1984	0	15	15
1968	0	0	0	1985	0	61	61
1969	0	0	0	1986	0	64	64
1970	0	0	0	1987	0	63	63
1971	0	0	0	1988	0	61	80
1972	0	0	0	1989	0	159	159
1973	0	0	0	1990	0	178	176
1974	0	5	5	1991	0	178	181
1975	0	5	5	1992	0	178	176
1976	0	3	3	1993	145	5	150*
1977	0	5	5	1994	228	6	234*

Source: ICCAT, *Report for biennial period, 1990-91,* Part I (1990), English version, Madrid, Spain, 1991 (data for 1960-64), p. 234 and ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, (data for the Mediterranean, 1965-94), p. 63. (*) Figures do not agree with those reported in ICCAT, Report of the Standing Committee on Research and Statistics (SCRS), Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/26, Madrid, Spain, 1996.

Table 2.--TUNISIA. Landings of swordfish, by port and month, 1994.

Month	Tabarka	Bizerte
	Metric Tons	
January	7.7	0.3
February	18.9	1.2
March	18.6	0.7
April	0.5	0.4
May	2.3	0.4
June	0.5	0.7
July	3.2	0.7
August	15.6	0.7
September	22.2	3.6
October	36	4.3
November	21.6	5.4
December	25.7	0.5
Total	172.8	18.9

Source: Abdallah Hattour, "La pêche de l'espadon (*Xiphias gladius, L.*) en Tunisie: Analyse préliminaire de la relation taille poids," Institute National Scientifique et Technique d'Océanographie et de Pêche," GFCM-ICCAT/95/9 and SCRS/95/49.

C.

INDIAN OCEAN

Few of the African and Middle Eastern countries bordering on the Arabian Sea and Indian Ocean reported harvesting swordfish during the period 1992-93. It is possible that statistical data will eventually be submitted to the FAO in Rome which tracks fishery landings. Harvesting of swordfish, however, is thought to be taking place mostly in cooperation with foreign-flag tuna fishing countries and harvests of swordfish may be included in catch reports made by those nations. The French Overseas Department of La Réunion has an active, growing swordfish fishery with recent catches in the 400-ton range.

4.1

DJIBOUTI

Fishermen in Djibouti do not report landing any swordfish (called *bousif* in Djiboudien). The EU, however, reported importing six tons of frozen swordfish worth $15,000 from Djibouti in 1991. This is likely to be an isolated one-time catch, possibly associated with fisheries for tuna-like species.

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Fishing grounds

The Republic of Djibouti[332] is an East African country located on the Horn of Africa between Eritrea and Somalia. It faces onto the Gulf of Aden and the Red Sea. Djibouti has a 314-km coastline and claims a 200-nautical-mile EEZ and a 12-nautical-mile Territorial Sea. The country has a Continental Shelf area of 2,280 km^2.

There are five main fishing grounds in Djibouti: (1) the southern coast of the Gulf of Tadjourah, (2) the Northern coast of the Gulf of Tadjourah, (3) the region to the north of Obock, (4) the southern region near Somalia, and (5) Goubet, the small area at the mouth of the Gulf of Tadjourah.[333] The best fishing grounds are beyond the Gulf of Tadjourah in the Gulf of Aden, where fishermen catch snapper, grouper, carangids, tunas, barracuda, mullets, and sea breams.[334] The northern coast near Obock is also an important fishing ground. These fishing grounds, especially the Gulf of Tadjourah, include swordfish.[335]

Fleet

Fishing in Djibouti is almost entirely artisanal or subsistence-based. There were about 350 fishermen working full-time in small fishing villages.[336] These fishermen fish with a fleet of about 100 "houris" (a small, wooden boat) or "sambuks" of different sizes. There are also a number of fiberglass boats in the three to five-m range equipped with 15- to 25-hp outboard motors in the fleet.[337] They are mostly based in Djibouti, Tadjourah, Obock, and Khor Anghar. There reportedly were two trawlers registered in Djibouti in 1988.[338]

Shipyards

There are a number of small, private workshops where independent boat builders work and where repairs can be undertaken. However, everything connected with fishing must be imported, including timber to build boats.

Fleet operations and gear

Fishing takes place from September to December and from March to June when favorable weather conditions prevail. Catches decline in July and August and January and February when poor weather hampers fishing. Djibouti fishermen use longlines, handlines, gillnets, and trolling lines. The pelagic species are caught using longlines and trolling lines. Lobsters are caught in traps and by divers.[339]

Catch

A. General

Fishermen in Djibouti increased their harvests from 286 tons in 1984 to 454 tons in, but the harvest gradually declined to 300 tons in 1993. Groupers, snappers, porgies, and sea bream constitute much of the catch. Local fishermen also report catching small quantities of tuna-like species (usually 15 to 30 tons).[340] There is a report of a tuna vessel named the *Tadjourah* fishing in the late 1960s, but no further information is available on tuna fishing in these waters.[341]

B. Swordfish

There are no reports of swordfish being caught in Djibouti. However, a book published by Mahmoud Bouhlel entitled the *Fish of Djibouti* (*Poissons de Djibouti*), in 1988, reported that swordfishes *are* caught in May of each year in the Gulf of Tadjourah and nearby waters. The author did note, however, that swordfish are caught only rarely and are sold fresh on local markets when captured.[342] Based on this information, it appears that an unusually large amount of swordfish was caught in 1991 and that six tons were shipped to the EU in a frozen form -- in addition to any swordfish sold immediately as fresh fish.

Companies

The Marine Fishing Cooperative (Association coopérative de pêcheurs maritime, ACPM) is responsible for the distribution of approximately 70 percent of the total fisheries catch. Some fishermen, however, do sell directly to fishmongers in the town of Djibouti and to consumers, including the expatriate community of about 5,000 people.[343]

Trade

A. Imports

Djibouti is not thought to import any swordfish.

B. Exports

The EU reported imports of six tons of frozen swordfish worth $15,000 from Djibouti in 1991.[344]

International relations

There are no fishery agreements or joint venture activities between Djibouti and any other country.

Future trends

Djibouti is not expected to expand its fishery for swordfish in the near future, although the potential for expanded harvests of fish (including large pelagics) does exist.[345]

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4.2

KENYA

Kenya is a nation where fish production comes from the Nation's extensive inland waters, particularly Lakes Victoria, Baringo, Naivasha, and Turkana. Kenya reported only a modest marine harvest in 1993 and no swordfish. However, Kenya did catch six tons of swordfish in 1989 and seven tons in 1990.

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Fishing grounds

Kenya borders the Indian Ocean between Somalia to the north and Tanzania to the south. It has a 536 km coastline and a Continental Shelf of about 6,500 km^2. Kenya's marine fisheries are limited mostly to inshore waters with a width that ranges from five km out to 48 km at the Kenya Bank, from Malindi to Lamu. Coral outcrops make fishing difficult in many areas. Coastal waters are not particularly rich and high-energy waves sweeping across the Indian Ocean produce strong currents and heavy surf along the entire coast.[346]

Fleet

Kenya's fishing fleet consist of 1,500 to 3,000 small one-man dugout canoes (*ngalawas*), outrigger canoes, sailing dhows (*jahazis*), and some motorized vessels.[347] These craft are operated by an estimated 12,000 artisanal fishermen.

In the mid to late-1970s, the Government of Kenya decided to acquire two tuna longliners to better use their existing processing and cold storage facilities.[348] The Kenya Fishing Industries Ltd. ordered the vessels to be built by the Hynundai Corporation of the Republic of Korea (ROK).[349] The two 250-grt tuna longliners were delivered in December 1979.[350] Kenya reportedly operated these two 44-m longliners at least through 1984 when they caught 22 tons of swordfish.[351] There were no further reports of these vessels operating after 1984.

Shipyards

Kenya's shipbuilding industry is quite small and limited primarily to repairs and dry-docking. There are only two major shipbuilding companies, both located in Mombassa.[352]

Fleet operations and gear

Kenyan artisanal fishermen use fixed traps (*malema*), handlines, fixed gillnets, tangle nets, and beach seines (*juya*) to harvest marine species of fish. Commercial shrimp fishermen use shrimp trawls while the two tuna longliners that arrived in 1980 use longline gear.

Catch

A. General

In 1993, only 4,808 tons of marine fish were landed compared to 180,630 tons of inland freshwater fish landed. Marine fisheries do not provide significant quantities of fish to Kenya, although potentially larger harvests can be made further offshore.

B. Swordfish

Kenya reported landing 22 tons of swordfish caught by longliners in 1983.[353] No further harvests were reported until 1989 when Kenya reported six tons of swordfish and 1990 when it reported seven tons of swordfish landed.[354]

Ten years earlier, when many foreign longliners were landing tuna and allied species at Mombassa, a total of 167 tons of swordfish was landed. In 1974, the following year, swordfish landings were 222 tons and 96 tons were landed for transhipping during the first six months of 1975.[355] Thus, Kenya does have a tradition of handling swordfish for Asian-flag tuna longliners operating in the Indian Ocean.

Ports

Faza, Kilifi, Kisingitini, Kipini, Kiunga, Kwale, Lamu, Malindi, Mombassa, Ngomeni, Shimoni, Tana River, and Vaga are the main fishing ports in Kenya, but there are many small fishing villages and landing beaches along Kenya's coastline.

Transshipments

Mombassa serves as a transshipment point for a Spanish fleet based in the Seychelles. The Director of Fisheries reports that several ships are operating both inside and outside Kenyan waters, including the Spanish tuna fleet, and fishing vessels from the ROK, Taiwan and Japan.[356] ROK and Taiwanese vessels have landed tuna in Mombassa for transshipment to distant markets since 1972 when 7,400 tons were landed.[357]

Processing and products

Swordfish is generally gilled or gilled-and-gutted and is sold as fresh product or is frozen for export to distant markets. In some West African countries smoked swordfish is considered a seafood delicacy and is purchased despite high prices.

Companies

The Kenya Fishing Industries Ltd. was established in 1967 to assist in the development of Kenya's marine fisheries. The company built a modern pier and a 2,000-ton cold storage facility.[358] The facility processed and transshipped tuna caught by foreign-flag tuna fleets operating in the Indian Ocean until inflation in 1973 resulted in many vessels transshipping their tuna in different ports.[359] It was then decided that Kenya Fishing Industries Ltd. should acquire two tuna longliners and begin catching tuna for processing in its existing facilities.[360]

Trade

Most of the fish landed along the coast is consumed locally in neighboring fishing villages by the fishermen and their families. A few high-value fish (such as shrimp, lobster, and some pelagic fish) are transported by fish dealers to Mombassa, Mallini, or inland to Nairobi where they can be sold to consumers at high prices. Shrimp, lobsters, and tuna are also exported to overseas markets (as presumably are swordfish).[361]

A. Imports

Kenya is not thought to import swordfish.

B. Exports

Kenya is likely to export any swordfish it catches to Asian or European markets along with any tuna that can be transshipped. EU trade data

shows that imports of frozen swordfish were 36 tons in 1991 and 54 tons in 1994.

International relations/joint ventures

A. International relations

Kenya is among the ten Indian Ocean member countries which have signed a memorandum of understanding for the formation of a West Indian Ocean Tuna Management Commission (WIOTMC). The other countries are Madagascar, Tanzania, Seychelles, Comoros, Mauritius, Mozambique, Maldives, Sri Lanka, and India. WIOTMC seeks to coordinate protection and development of marine resources in the region, conduct scientific surveys, and solicit external funding for its activities. Kenya has not signed any bilateral fishery agreements.[362]

B. Joint ventures

The Government of Kenya practices a conservationist fishing policy and has, in recent years, not licensed any foreign fishing vessels within the country's 200-mile EEZ. Kenya does not have any joint ventures with foreign fishing vessels.[363]

Future trends

Kenya is not expected to play a significant role in the swordfish fisheries of the Indian Ocean in the near future.

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4.3

MAURITIUS

Asian-flag longliners have called at Port Louis to unload their catch of tuna and swordfish for transshipment since 1960. Mauritius has a small fleet of vessels which catch modest quantities of tuna, but no catches of swordfish are reported. However, the EU reported importing 531 tons of frozen swordfish from Mauritius in 1993, and 1,525 tons in 1994. This makes Mauritius the most important transshipment point for swordfish in the Indian Ocean.

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Fishing grounds

Mauritius is a group of islands located in the Indian Ocean several hundred km to the east of Madagascar, just beyond the island of La Réunion.[364] The nation has a coastline of 177 km. The islands include Algalega Islands, Cargados, Carajos Shoals (Saint Brandon Islands), and Rodrigues. In addition, traditional fishing rights are claimed for Saya de Malha Bank and for the UK-administered Chagos Archipelago. The islands claim a 200-nautical-mile EEZ and a 12-nautical-mile Territorial Sea. Mauritius has a Continental Shelf area of about 1,630 km^2.

Fleet

The artisanal fleet consists of about 1,000 wooden boats of about six-m in length. About 20-percent of these vessels are equipped with outboard motors.[365]

Shipyards

Taylor Smith & Company, has facilities to repair fleets of oceanic-class tuna purse seiners belonging to the French and Spanish tuna fleets and to the fleets of Asian longliners that unload their fish for transshipment. The company operates a dry dock that is 425 feet long, 52 feet wide, and 17 feet deep. The drydock can accommodate two vessels in the 40-m range. The company can undertake repairs to hulls and provide other services. It also builds both wooden and steel vessels of up to 40 m in length.[366]

Fleet operations and gear

Artisanal fishermen usually fish along the barrier reefs and in lagoons, using large nets, basket traps, handlines, and harpoons. The artisanal catch is about 2,000 tons annually and has been slowly decreasing, as compared with catches in the mid-1970s. The lagoon fish resources have been overfished.[367]

Mauritius has a recreational fishery which contributes significant foreign currency earnings, but little in terms of total catches.

There is an offshore, commercial fishery that operates along the bank of the Mauritius/Seychelles ridge to the north of Mauritius. The most important fishing grounds are located 400 to 1,000 km from Port Louis, including those at St. Brandon, Nazareth, and Saya de Malha. Freezer motherships transport 15 to 20 fiberglass catcher vessels (six- to seven-m range) out to the fishing grounds. The catcher vessels are manned by three fishermen operating individual handlines who fish for scavengers *(Lethrinus* species). This operation began in the 1960s by the Mauritian Fishing Development Corporation which operated two motherships, the *La Perle II* and the *Sirene*.[368] There are about 15 motherships with around 1,100 fishermen taking 4,000 tons of fish per annum in this fishery.[369]

A tuna fishery began in 1979, with a Japanese joint venture operation. The venture started with a 50-m purse seiner. A second purse seiner was added in 1987. The operation has since expanded to include longliners. The catch of this operation exceeded 9,000 tons in 1989.[370]

Foreign-flag fishermen have fished in waters around Mauritius since 1960. These vessels unloaded their catch for transshipment to distant markets and for consumption in Mauritius.[371]

Catch

A. General

Fishermen in Mauritius landed 17,154 tons of fish and shellfish in 1988 and this increased slightly to 21,141 tons by 1993.[372] This is well above quantities caught in the 1960s before commercial fishing began. The harvest typically includes 4,000 to 6,000 tons of skipjack tuna and 1,000 to 2,000 tons of yellowfin tuna.

B. Swordfish

Mauritius does not report any landings of swordfish. If correct, then any "exports" of swordfish from Mauritius should be classified as "transshipments" instead of exports.

Ports

The principal port is Port Louis. The port has been improved over the past few decades to accommodate fleets of highseas tuna purse seiners and longliners that unload their catches and replenish before undertaking additional operations.

Transshipments

Mauritius has long been an important transshipment point for Japanese, Taiwanese, and Republic of Korea (ROK) longliners fishing outside of Mauritius' EEZ. Transshipments began in the 1960s; about 37,000 tons of frozen tuna were transshipped by Asian-flag vessels in 1969.[373] Tuna is unloaded in Port Louis and picked up by freezer vessels which carry the cargo to markets in Asia.[374] Tuna transshipments through the Port Louis have declined from 14,000 tons in 1978 to 5,000 tons in 1984.[375]

In 1987, the quantity of tuna and swordfish landed by longliners at Port Louis was 7,200 tons. These landings increased slightly to 7,300 tons in 1988 and to 8,200 tons in 1989. Swordfish landed at Port Louis by these vessels included 80.6 tons in 1987, 138.2 tons in 1988, and 179.4 tons in 1989. These longliners were flagged in Japan, Taiwan, the Soviet Union, the ROK, and Honduras, as well as in Mauritius.[376]

Mauritius is transshipping significant quantities of frozen swordfish to the EU. In 1991, the EU reported importing 112 tons of frozen swordfish from Mauritius. This increased to 344 tons in 1992, 531 tons in 1993, and 1,525 tons in 1994.[377] This makes Mauritius the most important transshipment point for swordfish in the Indian Ocean.

Processing and products

The swordfish being shipped to the EU from Mauritius is all frozen. It is likely that this is gilled or gilled-and-gutted product frozen at sea and simply delivered ashore for transshipment with no further processing.

Companies

Happy World, Ltd. is one of the largest corporations in Mauritius. It owns and operates a grocery distribution firm and cold storage. It transships about 4,000 tons of tuna annually. The author has no information about any companies in Mauritius that deal specifically with swordfish.

Trade

A. Imports

Mauritius is dependent upon imports to meet its requirements for fish and shellfish.[378] These imports include tuna which is canned and then reexported. Japan exported four tons of swordfish worth $4,000 in 1985 and six tons worth $6,000 in 1986. There were no further exports reported until 1991 when 41 tons of swordfish worth $197,000 were reported and 1992 when 134 tons worth $429,000 were reported.[379]

B. Exports

The EU reports importing significant quantities of frozen swordfish from Mauritius. The imports totaled 112 tons in 1991, 344 tons in 1992, 531 tons in 1993, 1,525 tons in 1994, and 377 tons in 1995. The author believes that these are not "exports," but rather transshipments from Asian-flag longliners operating in the Indian Ocean.

International relations/joint ventures

A. International relations

Mauritius and the EU signed a fisheries trade agreement in 1984 allowing canned tuna packed in Mauritius, but imported in raw form from other countries, to be considered as originating in Mauritius. The agreement allowed Mauritius to develop its tuna fishing industry and to continue exporting canned tuna to the EU under favorable terms. This agreement was extended on July 16, 1985, June 5, 1989, and June 20, 1990.[380]

The EU and Mauritius agreed to a fisheries access agreement in 1988, which allowed 40 tuna seiners, and an unspecified number of longliners and/or trawlers to fish in Mauritian waters. The EU provided financial assistance in exchange for fishing rights,[381] and agreed to pay $2 million to Mauritius for access to Mauritius' fishing grounds in the latest agreement.

Mauritius and the Seychelles signed a fisheries agreement on May 30, 1990, which allowed five Mauritian purse seiners and a longliner to fish in the Seychelles' EEZ for a two-year period.[382]

Spanish vessels conducted an exploratory longline fishery in the southwestern Indian Ocean in 1994-95. This research cruise was funded by the EU. The results led to a joint venture between Mauritius and Spain.[383]

B. Joint ventures

Tuna fishing in Mauritius was started by Kaigai Gyogyo K.K. of Japan in cooperation with Blyth Brothers, a private Mauritian fishing company, in 1972.[384] The company, Mauritius Tuna Fishing and Canning Enterprise (MTFCE), operated two tuna purse seiners called the *Lady Sushil I* and *Lady Sushil II*.[385] These vessels land their catch in Mauritius for storage in the company's 1,500-ton cold storage plant or for delivery to the company's tuna cannery, which can process 5,500 tons of tuna annually. The product, distributed under the *La Perle* brand, is exported to Réunion and to other distant markets, including the EU. The firm received special permission from the EU to export 1,600 tons of canned tuna to the EU through November 1978.[386] The Japanese provided funding for a research laboratory in exchange for fishing privileges.[387] The company reports no catch of swordfish in its annual statistics.

A joint venture between business interests in Mauritiius and Spain was established following an EU-funded research project in the southwestern Indian Ocean in 1994-95 by five Spanish longliners. No additional information is available on this joint ventures.[388]

Future trends

Mauritius is strategically placed astride major fishing grounds and trade routes leading to both European and Asian markets. The explosive growth in transshipments of swordfish to EU markets in recent years deserves careful monitoring. It is likely to continue in the future. There is no information about who is landing this swordfish. It is likely that the

swordfish are being caught by tuna longline vessels and this suggests that the Asian-flag fleets are responsible for the catch, since most of the European-flag vessels consist of purse seiners.

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4.4

OMAN

The Sultanate of Oman has rich, if underdeveloped, marine resources, which include demersal species, small pelagics, and large pelagics. Oman's fisheries wealth is the result of favorable currents and associated migrations of the large pelagic fish. The bulk of Omani fishing is done by traditional fishermen. Government policies encourage Omanis to become fishermen and subsidies exist for the purchase of new vessels and engines. There were 4,945 Omanis licensed to fish in 1994.[389] As a result of this increase, the shallow waters of Oman's northern coast have become heavily fished.[390]

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Fishing grounds

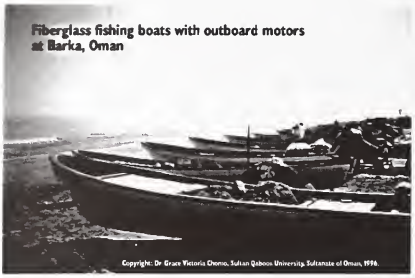
Oman borders the Arabian Sea, the Gulf of Oman, and the Persian Gulf between Yemen and the United Arab Emirates. It has a coastline of 2,092 km, a 24-nautical-mile contiguous zone, a 200-nautical-mile EEZ, and a 12-nautical-mile Territorial Sea. The five administrative regions in Oman include Dhofar, Al-Wusta, Al Sharqiyah, Musandam, Al-Batinah, and Muscat.

Fleet

Omanis traditionally fish from locally-made, wooden sailboats (*dhows*, *houris*, *sambuks,* and *shashas*) ranging from four to twelve m in length. These vessels are used in small numbers, and are powered by outboard motors. In recent years local fishermen have begun to use faster, foreign-made, fiberglass skiffs. The Ministries of Commerce, Industry, Agriculture, and Fisheries jointly sponsored a project to provide local fishermen access to larger vessels. The plan called for fiberglass hulls to be constructed in Oman, with motors to be imported from abroad. The vessels would come in two sizes: one to three tons, and 10 to15 tons. These craft are designed to provide fishermen with a greater fishhold capacity as well as refrigeration capability, and will allow Omani fishermen to spend longer periods (three to five days) at sea. The fishermen are currently restricted to day trips only.[391] A total of 267 boats were distributed to Omani fishermen in 1992 along with 440 outboard engines. An additional 290 engines were distributed in 1993 and 363 engines in 1994. The vessels were distributed as follows: Muscat (58), Al Sharqiyah (57), Al Batinah (56), Musandam (36), Dhofar (31), and Al Wusta (29).[392]

Shipyards

Omanis have small shipyards able to build and maintain wooden fishing vessels found in their waters.[393] They are also building fiberglass vessels for the fishing industry.



Fiberglass fishing boats with outboard motors at Barka, Oman

Fleet operations and gear

Oman issued 3,838 licenses to fishing vessels in 1994 versus 4,157 licenses in 1993 and 3,548 licenses in 1992.[394]

In addition to the local fishing fleet, Taiwan-registered tuna longliners have been allowed to fish Omani waters since 1989. During the 1989-90 season, as many as 19 Taiwanese longliners fished in local waters. During the 1990-91 season only eight longliners were given licenses, and in the 1991-92 season 11 licenses were issued.

The Indo-Pacific Tuna Development and Management Program of the UN has reported that the Oman longline fleet began in 1990 with twenty 30-m multipurpose longliners. The fleet reportedly declined to eight vessels in 1991 and then increased to 29 vessels in 1992 and to 100 longliners in 1993.[395]

The Oman Fisheries Company was recently given permission by the Omani Government to grant twenty to fifty licenses to tuna longliners at a time. Some of these licenses are held by Taiwanese companies whose longliners target yellowfin tuna, but which also catch marginal quantities of sailfish, marlin, swordfish, mahi-mahi and shark (table 2). The government limits the total allowable catch of tuna to 35,000 tons per year. The longliners are prohibited from fishing within 20 miles of shore. Questions sometimes arise about how closely these limits are observed. The longliner fishing season runs from September through May.[396]

Catch

A. General

Omani fishermen caught 118,600 tons in 1994.[397] This represents a decline from the 166,000 tons caught in 1988. Yellowfin tuna accounted for 7,027 tons of the total catch. Omani fishermen also reported a harvest of 389 tons of sharks and 168 tons of marlins, sailfishes, and spearfishes in 1994. Commercial (industrial) fishermen harvested 21,037 tons while traditional (artisanal) fishermen caught 97,531 tons of fish in 1994.[398]

B. Swordfish

Omani fishermen using longline gear caught nine tons of swordfish in 1991, five tons in 1992, and 35 tons in 1993.[399] Taiwanese-flag longliners reportedly caught nine tons of swordfish in Omani-waters during 1989-90 and two tons during the 1990-91 fishing season.

Omanis are not targeting swordfish, as is evidenced by the small quantities being landed. However, the Omanis are interested in developing tuna resources and that could increase the bycatch of swordfish, depending upon the type of fishing gear used.

Ports

Key Omani ports include Mina' al Fahl, Mina' Qabus, and Mina' Rayscut.

Transshipments

Omani ports serve as transshipment points only for distant-water fleets fishing in Omani waters. The foreign licensees are prohibited from transferring shipments at sea to mother vessels which carry the fish to foreign markets because the Omanis want to ensure they receive their portion of the catch. Critics of the foreign markets complain that transshipment at sea in fact does take place. Muscat's port, Mina Qaboos, at present can only accommodate four vessels at any one time. The port is undergoing expansion.[400]

Processing and products

It is likely that all swordfish brought ashore are gilled or gilled-and-gutted for export in either a chilled or frozen form. Swordfish caught by Taiwanese longliners are thought to be frozen.

Companies

The Government of Oman in 1991 granted five Omani companies block quotas for industrial fishing. The licenses were granted as follows: Oman Fisheries Company (5 trawlers), Protein Produce International (8 longliners), Gulf of Oman (2 trawlers), Oman Sea Company (3 trawlers), and Sadah Marine (1 trawler). These companies parcel out their licenses to foreign fishermen in return for a percentage of the catch. Twelve percent of the total catch is also retained by the Omani Government as a royalty or licensing fee.[401]

Protein Produce International was probably the dominant producer of swordfish in Oman in 1991. This was based on the fact that trawlers generally do not target swordfish. A fleet of eight longliners, by contrast, can generate good landings of tuna along with swordfish and other species.

The Oman Fisheries Company in 1993 was apparently given permission to grant twenty to fifty licenses to tuna longliners. Those licenses are currently held by Taiwanese companies that catch yellowfin tuna and lesser quantities of swordfish and other species (table 2).

In 1994, the marine harvest by the five Omani commercial fishing companies amounted to 21,037 tons. Harvests by individual companies were as follows: Oman Fisheries Co (12,585 tons), Oman Sea Co. (5,547 tons), Gulf of Oman Co. (1,246 tons), Protein Products (933 tons), and Sadah Marine Products (726 tons).

Trade

Tunas are a historically popular fish among consumers in the Arabian Peninsula, with consumption of canned tuna (and seerfish) averaging 80,000 to 85,000 tons annually.[402] Markets for canned tuna are the highest in the United Arab Emirates (UAE), Saudi Arabia, Qatar, Kuwait, Bahrain, and Oman.[403]

A. Imports

It is unlikely that Omanis import swordfish for domestic consumption, but information to support this statement is lacking.

B. Exports

Oman has increased its exports sharply in recent years. Exports amounted to 29,542 tons in 1992 and these shipments reached 45,810 tons in 1993 and 44,586 tons in 1994. Over half of Oman's exports of fishery products go to neighboring countries (U.A.E., Bahrain, Saudi Arabia, Qatar, and Kuwait). Shipments to Europe account for about 13 percent of total exports while shipments to the United States account for less than one percent of total exports.[404]

Oman became an exporter of tuna in the late 1980s, with shipments going to Korea, Japan, France, Thailand, Spain, the United Kingdom, and the United States.[405]

It is likely that any swordfish caught by Omani fishermen are exported. EU trade data show imports of seven tons of swordfish from Oman in 1992, six tons in 1993, and two tons in 1994., The catch of swordfish by foreign-flag tuna vessels is most certainly transshipped to foreign markets.

International relations/joint ventures

A. International relations

Oman has no bilateral fisheries agreements, nor does it currently participate in joint fisheries ventures, although it does license foreign-flag vessels to fish in its EEZ.

B. Joint ventures

The Omani Government provided a concession to the Korean Fishing Company of the Republic of Korea which allowed that company to fish in Omani waters from 1982 to February 28, 1989. This company caught 3,473 tons of fish in 1982 and reached a record 9,791 tons in 1986. Catches declined to 8,094 tons in 1987.[406]

The Oman Fisheries Company has held discussions with potential joint venture partners from Spain and Asian countries in recent years. The Oman Fisheries Company in 1993 was authorized to grant 20-50 licenses to tuna longliners. The foreign partner would operate vessels hired by the Omanis, while the fisheries company would cover the cost of operations. Omani trainees would learn the business from the foreign nationals manning the vessels.[407] The Government of Oman reportedly would require on-board observers to monitor compliance with Omani regulations for any venture. New fishing ventures could significantly increase the harvest of swordfish by Omanis. The author has no information as to whether or not this has taken place.

Future trends

The Indo-Pacific Tuna Development and Management Program of the UN has reported that the Oman longline fleet grew from eight vessels in 1991 to 100 in 1993. It is unclear whether or not these vessels are owned and operated by Omani fishermen or whether they are joint venture longliners operated by Spanish or Asian-flag fishermen. In any event, the addition of 100 longliners in a two-year period represents a sizeable increase and should serve as a red flag to Omani and other fishery officials concerned about the management of swordfish stocks in the Indian Ocean.

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"Oman now a top producer, exporter of tuna in Gulf," *Times of Oman*, February 16, 1989.

Table 1. OMAN--Catch of tuna and billfish by Taiwanese longliners operating in Omani waters, by fishing season, 1989-91.

Species	Catch	
	1989-90	1990-91
	Metric tons	
Yellowfin tuna	3818	1464
Sailfish	37	12
Swordfish	9	2
Shark	50	9
Marlin	3	10
TOTAL	3,917	1,497

Source: "Oman: World Fishing Fleet Study," U.S. Embassy, Muscat, Oman, June 20, 1993.

4.5

LA RÉUNION

La Réunion is an Overseas Department of France.[1] The harvest of swordfish off the coast of La Réunion amounted to 400 tons in 1994. The catch is mostly sold locally or shipped to France for processing and re-export to Italy, Spain, and other European countries. The fishing effort on swordfish by French fishermen has increased dramatically since 1990 as new longliners join the fleet fishing for tuna and swordfish from local ports.

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Fishing grounds

La Réunion is a small island in the Indian Ocean east of the Malagasy Republic with a coastline of only 201 km. La Réunion has an EEZ of 318,300 km^2. This is where the small fleet of French swordfish vessels is based. The swordfish fleet operates about 90 miles northwest of La Réunion, off Tromelin, Mauritius, and the coast of Madagascar. Fishing for swordfish has been a more recent activity, but interest is growing.

Fleet

During the 1980s, the number of vessels fishing for swordfish out of Réunion ranged between 2 to 4 vessels. The vessels used pole-and-line fishing techniques aimed mostly at catching tuna and caught swordfish as an incidental catch. By 1989 there were only two vessels in this fleet.[408]

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[1] La Réunion is an Overseas Department of France and should be considered no different from any other region of Metropolitan France, just as Hawaii is part of the United States. Thus all swordfish caught by, landed in, or shipped from La Réunion -- should be considered as "French." In practice, however, La Réunion is treated as a separate entity and fishery landing and trade data are reported apart from mainland France.

The first vessels designed to fish for swordfish using longlines included three 16-m grp-hulled longliners built in France in 1991. The initial vessel, the *Saint Benoît*, served as the prototype for two other vessels: the *Saint Leu* and *Saint Joseph*. The three vessels were all owned by Clipper Engineering of Le Havre.[409] The *Saint Benoît* was launched on July 11, 1991, and it left for Saint Denis de La Réunion in September 1991. The other two vessels were delivered in November 1991.[410]

L'Armement Viking's fleet in La Réunion included 3 vessels in 1992. In 1993, the company built a catamaran designed specifically to fish for swordfish. The *Viking Espadon*, a 20-m longliner, built in the Océa shipyards in France, was delivered in December 1993 and departed for La Réunion shortly thereafter. The *Swordfish*, a sistership, was launched towards the end of 1994.[411] Thus l'Armement Viking's fleet of swordfish vessels operating out of La Réunion included 5 vessels by mid-1995. In late 1995, the Bénéteau shipyards of France delivered a 22-m longliner, the *Viking Honfleur* to Viking for its operations in La Réunion.[412] In 1996, the Océa shipyard delivered the 24.5-m catamaran *Viking Explorer* to l'Armement Viking. The ship was a sister to the *Cayenne*, a catamaran which had been operating off La Réunion (no dates concerning the launching of this vessel and when it began fishing were provided). In mid-1996, the Océa boatbuilder in Les Sables d'Olonne delivered the 22-m aluminum longliner catamaran *Viking Marlin* (LS 864286) to the Viking Company. The company was also in the process of having an additional vessel, the *Viking Gladius*, built for them at the Océa shipyards.[413] By mid-1996 l'Armement Viking, according to *World Fishing's Vessel Yearbook,* was operating a fleet of 17 vessels out of La Réunion.[414]

In late 1995, the French shipyard Pirou launched a 33.6-m longliner *Sapmer* (RU 894 545) for the Sapmer company of La Réunion. The vessel was the largest French longliner ever built and will carry a crew of 12 for voyages of 40 to 50 days. The vessel is equipped with a freezer tunnel capable of freezing the catch to -50° Centigrade. This will allow the vessel to produce a very high quality tuna for the Japanese sashimi market and to land deep-frozen tuna and swordfish for sale in La Réunion or for export to Italy, Spain, or Great Britain. The *Sapmer* was expected to leave for La Réunion near the end of December 1995.[415] The *Sapmer* will join the *Amarylis* which is also owned by the firm Sapmer. The *Amarylis*, an old trawler, was used to test longlining out of La Réunion before the *Sapmer* was built.

The French shipyard Chantier Piriou recently refitted a twenty-year-old trawler, the *Labadie* into a longliner with new freezing equipment and extensive renovations to the crew quarters, wheelhouse, and fishroom. The vessel was renamed the *Erebus II.* and was chartered to the French Intermarche supermarket group through Compagnie Maritime du Sud. The vessel began fishing for tuna and swordfish using a Lindgren-Pitman monofilament longlining system.[416]

In summary, there were 3 vessels operating out of Réunion in 1992 and this increased to over twenty vessels by 1996 with additional vessels scheduled for launching in the near future. This represents a significant increase in the size of the fishing fleet (see table 1 below). The FAO's Indo-Pacific Tuna Development and Management Program has reported the French longline fleet in the Indian Ocean as consisting of one vessel in 1991, 4 vessels in 1992, and 15 longliners in 1993.[417] These vessels ranged in size from 15 to 25 m in length and were all listed by the FAO as tuna longliners.

Shipyards

All of the French swordfish longliners operating out of ports in Réunion were built in Metropolitan France shipyards. The Océa Shipyard at Sables-d'Olonne built the *Viking Espadon*, *Swordfish*, *Viking Espadon*, and *Viking Explorer* for the l'Armement Viking between 1993 and 1995.[418] The shipyard is currently building the *Viking Gladius* and the *Viking Marlin* for l'Armement Viking. The Beneteau shipyard in western France built three grp-hulled vessels, the *Saint Benoit*, *Saint Leu*, and *Saint Joseph* in 1991 for Clipper Engineering of Le Havre.[419] The Bénéteau shipyards also built the *Viking Honfleur* for l'Armement Viking in 1995. The Pirou shipyards built the 33.6-m longliner *Sapmer* for the Sapmer company of La Reunion; this vessel was the largest longliner ever built in France for a French company.[420] The Chantiers Piriou also extenstively refurbished a 20-year-old trawler into a longliner named *Erebus II.* for operations off La Réunion beginning in 1996.

Fleet operations and gear

The French fleet operating out of La Réunion has use semiautomatic drifting longlines stretching 80 km consisting of 4-mm line with 2,000 hooks.[421]

Catch

The French swordfish fleet in Réunion caught 400 metric tons of swordfish in 1994.[422] The 1993 catch reportedly included 217.2 tons of swordfish and 4.2 tons of billfish.[423] The FAO's *Indian Ocean Tuna Fisheries Data Summary* reports that fishermen in La Réunion caught two tons of swordfish in 1991, 65 tons in 1992, and 141 tons in 1993 using longline vessels.[424]

Ports

The principal ports in Réunion include Pointe-des-Galets, St. Denis, and St. Pierre.

Transshipments

The swordfish harvest is shipped to Boulogne-sur-Mer, mostly through La Réunion, but sometimes through other Indian Ocean countries where the French maintain large tuna fishing operations.[425]

Processing and products

Swordfish is landed as fresh gilled and/or gilled-and-gutted product for sale in local markets as well as for airshipment to France where it is processed into swordfish fillets.[426] Fresh swordfish sent to France are H&G and and packed in specially designed cardboard boxes. The fish is packed in ice under a plastic film and is sent via air freight to the Rungis Market in Paris. Some swordfish are processed at sea into frozen vacuum-packed loins at -20°C; this is done by vessels over 20 m which remain at sea for voyages lasting from 18 to 25 days.[427]

Companies

A. Clipper Engineering:

The first longliners designed to fish swordfish in the waters off Réunion included the *Saint Benoît*, the *Saint Leu*, and the *Saint Joseph*. All three vessels were owned by Clipper Engineering of Le Havre.[428]

C. L'Armement Viking:

This is the largest company dealing with swordfish in La Réunion. Viking's fleet in La Réunion included 3 vessels in 1992. In 1993, the company built the *Viking Espadon*, a 20-m longliner expressly for fishing swordfish. The *Swordfish*, a sistership, was launched towards the end of 1994.[429] L'Armement Viking's fleet of swordfish vessels operating out of La Réunion were augmented in 1995, when the Bénéteau shipyards of France delivered a 22-m longliner, the *Viking Honfleur*.[430] In 1966, the Océa shipyard delivered the 24.5-m catamaran *Viking Explorer* to the firm. The ship was a sister to the *Cayenne*, a catamaran which had been operating off La Réunion (no dates concerning the launching of this vessel and when it began fishing were provided). Thus, by mid-1996, l'Armement Viking was operating 8 vessels, mostly newly built catamarans out of La Réunion. The company was also in the process of having 2 additional catamarans, the *Viking Gladius* and the *Viking Marlin*, built for them at the Ocea. L'Armement Viking clearly is a very active fishing company rapidly expanding its swordfish fishing operations off La Réunion.

C. SAPMER:

The Sapmer company of La Réunion recently designed and took delivery of the *Sapmer*, the largest longliner ever built in France for a French company. The vessel will fish for tuna and swordfish in the Indian Ocean for export to Japan, Italy, Spain, and Great Britain. Some of the catch will be sold in La Réunion.[431]

D. Intermarche:

The Intermarche supermarket group has leased the Chantiers Piriou longliner *Erebus II* to supply it with swordfish and tuna. The vessel is a 20-year-old trawler that was extensively renovated and began fishing off La Réunion in 1996.[432]

E. Other:

The company identified as ENAA was recently absorped by a local fishing company identified as SOPESUD. The company now processes fresh swordfish loins for export to Europe. SOPESUD buys its fish from the smaller vessels which land

only fresh fish.

Another firm, the CLL company, recently purchase a loin processing plant in Metropolitan France. The CLL company reportedly shipped 170 tons of H&G, fresh swordfish to France for processing into loins. A further 115 tons was shipped to Spain and 60 tons were shipped to Italy.[433]

Markets

A. Domestic

Quantities of swordfish are sold locally where the product appears to be well-liked.

B. Trade

1) Exports

EU trade statistics indicate that La Réunion exported 26 tons of frozen swordfish in 1991, 9 tons in 1992, 60 tons in 1993, 381 tons in 1994 and 301 tons in 1995.

Fresh swordfish sold in France and arriving from La Réunion sells from 50 to 60 French francs per kg (US$8.93/kg to $10.71/kg). Frozen swordfish loins sell for 35 to 45 francs per kg ($6.25 to $8.04 per kg). Fresh swordfish is in great demand in Europe and product that can be airshipped to France receives premium prices.[434]

La Réunion's fishing industry have taken an agressive approach to marketing fresh swordfish loins in France and elsewhere in Europe in recent years.

2) Imports

Réunion is not thought to import swordfish.

International relations

It is likely that France participates in the Indo-Pacific Tuna Development and Management Program and follows swordfish developments as a member of that body.

Future trends

The French are currently studying the potential for expanding their swordfish and billfish fisheries in the Indian Ocean and, together with the EU, are assessing the status of these stocks. It is very likely that France will continue to expand its swordfish fishing out of La Réunion in the future.[435]

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No.	VESSEL NAME	YEAR BUILT	OWNER
1	*Saint Benoit*	1991	Clipper Engineering
2	*Saint Leu*	1991	Clipper Engineering
3	*Saint Joseph*	1991	Clipper Engineering
4	*Cayenne*	1992	Viking Company
5	Unknown	1992	Viking Company
6	Unknown	1992	Viking Company
7	*Viking Espadon*	1993	Viking Company
8	*Swordfish*	1994	Viking Company
9	*Viking Honfluer*	1995	Viking Company
10	*Sapmer*	1995	Sapmer Co.
11	*Amarylis*	1995	Sapmer Co.
12	*Viking Explorer*	1996	Viking Company
13	*Viking Marlin*	1996	Viking Company
14	*Labadie*	1996	French Intermarche
15	*Erbus II*	1996	French Intermarche
16	*Viking Gladius*	Under construction	Viking Company
17	Unknown	Unknown	Viking Company
18	Unknown	Unknown	Viking Company
19	Unknown	Unknown	Viking Company
20	Unknown	Unknown	Viking Company
21	Unknown	Unknown	Viking Company
22	Unknown	Unknown	Viking Company
23	Unknown	Unknown	Viking Company
24	Unknown	Unknown	Viking Company

According to Andrew Jeffs in *World Fishing - Vessel Yearbook for 1996* ("'Viking Marlin' - A catamaran longliner from the innovative OCEA"), the Viking company has a fleet of 17 vessels fishing out of La Reunion.

4.6

SEYCHELLES

Foreign tuna fleets from France, Spain, and Asia have fished for tuna in the Seychelles' waters and unloaded their catch for export to distant markets since the early 1980s. The Seychelles are now the most important landing and transshipment point for tuna in the southwestern Indian Ocean. The Seychelles reports a very small catch of swordfish (28 kg in 1990) in its recreational fisheries. The EU also lists imports of very small quantities of swordfish originating from the Seychelles on a regular basis.

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Fishing grounds

The Seychelles consist of 92 granite and coral islands in the Indian Ocean northeast of Madagascar and to the east of Tanzania and Kenya. The Seychelles were turned over to Great Britain in 1814 by the Treaty of Paris and many inhabitants still speak 18th-century French.[436] The island nation gained independence on June 28, 1976. The islands have a coastline of 491 km and declared a 200-nautical-mile EEZ on August 1, 1977.[437] This EEZ gives the Seychelles access to an estimated 48,334 km^2 of ocean. The waters around the Seychelles are known for their abundant stocks of tunas.

Fleet

The Seychelles in 1990 had an artisanal fishing fleet of about 200 vessels. The fleet consisted of 102 pirogues, 84 whalers, and 16 schooners. The fleet also includes fiberglass vessels built locally beginning in 1982.[438] There were also seven marine charter boats in operation in 1990.

Additionally, there is a foreign fleet of mostly ultra-modern tuna clippers that fish in the Seychelles EEZ. Tuna stocks were discovered in the 1980s when the French tuna industry sent the purse seiner *Ile de Sein* on a survey of these grounds. The expedition proved very positive. At the end of 1982, four vessels based in

Abidjan, Côte d'Ivoire, began commercial fishing for tuna out of the Seychelles. By the end of 1984, there were 48 French and Spanish vessels fishing in Seychellois waters.[439] By 1989, there were 48 highseas purse seiners fishing for tuna in the Seychelles. These included 20 French, 19 Spanish, 4 Soviet, 3 Mauritanian, one Panamanian, and one Indian vessel.[440] There were, in addition, 127 licenses issued to Republic of Korea (ROK) longliners and 40 licenses issued to Japanese longliners giving them permission to fish on a monthly basis. These vessels catch mostly yellowfin, bigeye, marlin, and sharks. Taiwanese longliners had been active during 1987-88.[441] It is likely that swordfish is caught as a bycatch in these longline fisheries.

Shipyards

There are some ship repair facilities at the port of Victoria on the island of Mahé. Information about the extent of these facilities, which are believed to be quite good, are lacking. The facilities provide services to fleets of ultra-modern oceanic-class tuna purse seiners in the French and Spanish fishing fleets and to Asian-flag longliners.

Fleet operations and gear

The artisanal fishing fleets fish for travalles, emperor red snapper, bourgeois, goatfish, groupers, job, little tuna, mullets, and wrasses.[442] Gear used include traps, gillnets, and handlines. Traps generally catch wrasses, emperors, and goatfish. Mackerel is usually caught by gillnets and bourgeois and vieilles are caught by handlines. Handlining was introduced in 1974 and generates fish for export to La Réunion, Japan, and the EU.[443]

In 1981, the Seychelles obtained a longliner, the *Seykor*, to fish for tuna in their waters. The vessel was managed by officers from the ROK and was run by Seychellois crews. In 1984, the *Seykor* caught 400 tons of tuna which were exported to Japan.[444]

The marine charter fleet of seven vessels reportedly caught 28kg of swordfish in 1990.[445] The catch was made by trolling methods.[446]

Catch

A. General

Fishermen in the Seychelles caught between 4,343 tons of fish and shellfish in 1988 and 8,180 tons in 1991. The 1993 catch was estimated at 7,000 tons. Groupers and barracudas are important species landed in recent years.[447]

The Seychelles reports catching skipjack, bigeye, kawakawa, and yellowfin tuna as well as Indo-Pacific sailfishes, marlins, sailfishes, and spearfishes.[448]

B. Swordfish

The Seychelles Fishing Authority reports 25 kg of swordfish were caught by sports fishermen on marine charter boats during July 1990 and three kg in October 1990, for a total of 28 kg. This amounted to 0.2% of the entire recreational catch.[449] This quantity is consistent with the small quantities of swordfish being exported to the EU.

Ports

Fishing Port, on Mahé Island across from the capitol of Victoria, is divided into an international and a domestic zone. The berthing area in the international zone was expanded considerably since 1983 and includes cold storage and freezing plants, a tuna cannery, and quays and bunkering areas, as well as processing facilities.[450]

Transshipments

In 1985, the Fish Marketing Division of the Seychelles Marketing Board was established to begin expanding the onshore infrastructure to support the growing transshipment business. The construction of a 400-ton cold store facility and blast freezers was also undertaken.

Processing and products

There are facilities in the Seychelles to fillet fish for export to La Réunion and the EU. These fish can be shipped on ice (premium grades) or frozen. Smoking fishery products can also be undertaken.

It is likely that any swordfish landed by fleets of foreign flag vessels are already frozen as gilled or gilled-and-gutted product ready for export.

Companies

The Seychelles National Fishing Company (SNAFIC) was established in June 1979, following an

agreement between the governments of France and the Seychelles. The initial capital investment was $5.8 million and the project included four French-built tuna vessels.[451] Other fishing companies include Tradewinds Fisheries, Larue Fishing and Trading Company, Ltd., Le Bon Poisson, and Hook N Nook.[452]

Trade

A. Imports

The Seychelles is not believed to be importing any swordfish.

B. Exports

The EU reported importing small quantities (one ton or less) of swordfish from the Seychelles on a regular basis between 1991-94 and 16 tons in 1995. It is possible that some small quantities of swordfish are being shipped to La Réunion, but data to support this are lacking.

In 1990, the Seychelles exported 247 tons of fresh fish (mostly to La Réunion and Great Britain) and 307 tons of frozen fish (to La Réunion). The list of exports did not show exports of swordfish for 1990.[453]

International relations

The Seychelles and the EU signed a 3-year agreement on January 18, 1984, which allowed 18 EU tuna purse seiners to fish in waters around the Seychelles. In 1984, these purse seiners transshipped 105,000 tons of tuna through Port Victoria.[454] In exchange, the EU agreed to $265,000 per year in fees for the right to fish for up to 6,000 tons of tuna along with a fee of $18.50 per ton of tuna caught.[455]

This agreement was extended in January 1987, and extended for three years. The 1987 agreement allowed 22 French and 18 Spanish tuna purse seiners to fish inside the Seychelles 200-mile EEZ in exchange for $6 million in fees; the agreement also called for an EU contribution of $0.7 million for a scientific research program. EU vessels were each required to pay $5,000 annually and pay $20 per ton of tuna caught.

The agreement was extended in 1990 through January 1993. The 1993 agreement allowed 40 high-seas tuna seiners to fish off the Seychelles in exchange for compensation amounting to $11.6 million.[456] This agreement was later extended through January 17, 1996. The agreement continued to allow 40 tuna seiners to fish off the Seychelles, but the financial compensation package was reduced to $10.8 million.[457]

Fisheries agreements were also reached with the Soviet Union (June 1987); the USSR reportedly operated an 800-grt tuna longliner and a 5,300-grt tuna mothership, the *Leninskie Luchy*, in the Seychelles 200-mile EEZ beginning in 1981.[458] Agreements have also been reached with Mauritius and the Côte d'Ivoire.

The Seychelles in 1983 granted short-term fishing licenses (two to four months) to 100 Republic of Korea longliners.[459] Japan also applies for permits on a short term basis, as needed.

The Seychelles is a member of the Indian Ocean Fisheries Commission.

Future trends

It is likely that marine charter boats will continue to catch small quantities of swordfish from time to time. These may be shipped to markets in the EU. It is unlikely that substantial changes will be made in how the Seychelles fishes for swordfish and thus landings should amount to only minimal quantities for the near future. It is curious that larger quantities of swordfish are not being reported as transshipments, especially from Asian longliners fishing in the Indian Ocean.

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4.7

UNITED ARAB EMIRATES

The United Arab Emirates (UAE) has access to migrating stocks of swordfish on a seasonal basis, but does not report any landings of swordfish. The EU has reported importing two tons of swordfish from the UAE in 1991. It is likely that this was an incidental catch associated with tuna fishing.

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Fishing grounds

The UAE is a Middle eastern state bordering Oman and Saudi Arabia across the Persian Gulf from Iran. It is a federation of seven emirates[460] that became an independent state on December 2, 1971. It faces both the Gulf of Oman and the Persian Gulf. The UAE has a 1,318 km coastline and a 200-nautical-mile EEZ. This gives the UAE access to about 64,000 km^2 of shelf area.

Between September and March of each year, there is an increase in sardines (mostly *Sardinella sindensis*) and anchovies (*Stolephorus* species) off the coast which attracts quantities of tuna and swordfish.[461]

Fleet

A. Domestic

UAE fishermen operate a number of different types of vessels, ranging from small *shashas* made of palm trunks to vessels with 250-hp, inboard diesel engines. The fleet of artisanal vessels numbered between 170 and 200 craft in 1991.

There were also 10 commercial fishing vessels in the UAE fleet in 1991.[462] These are believed to include seven U.S.-built purse seiners which were used to fish for mackerel and sardines for the Ras al-Khaimah Fish Company.[463]

B. Foreign

There are reportedly some 3,000 fishing vessels operated by an estimated 10,600 foreign crews fishing out of the UAE in the past few years.[464] Many of these are small craft employing Indian nationals.[465]

Shipyards

There are three major shipyards in the United Arab Emirates. These include Emirates Marine Services in Sharjah, Gulf Marine Maintenance Service in Dubai, and Sharaj Shipyard and Engineering Works, Ltd. in Sharaj.[466] In 1992, Yamaha Motor Company of Japan began building grp fishing boats under a technical assistance agreement with the Emirates. The boats are being built at the Al Yousuf Industrial Establishment in Dubai.[467]

Fleet operations and gear

Tunas are caught along the western coast of the UAE from Ras al Khaimah to Dubai with gillnets that are used to encircles schools of tuna and then all taken to shore where the net is hauled in by teams of 15 men.[468]

Fishing gear includes gillnets (*falje*), beach seines (*yell*), longlines (*minasa*), and wire traps (*garrgur*). The longlines are used to catch bottom-feeding sharks.[469] Most of this gear is deployed within 12 miles of the UAE coast, although some of the commercial vessels fish in the Arabian Sea.

Catch

A. General

The UAE fisheries catch has increased gradually from 72,000 tons in 1984 to 92,500 tons in 1993. The 1993 catch included large quantities of scavengers (also called emperors, 8,700 tons), sardinellas (8,600 tons), wolf herrings (7,600 tons), Stolephorus anchovies (7,600 tons), Indian oil sardines, and marine crabs (6,900 tons each). The harvest also included frigate and bullet tunas (630 tons), kawakawa (2,330 tons), and longtail tuna (3,850 tons).[470]

B. Swordfish

The UAE does not report catching swordfish. In view of the very small quantities being exported by the UAE, it is likely that some quantities of swordfish are occasionally caught as an incidental part of the UAE fishery for tuna.

Ports

The UAE's principal ports include Ajman, Al Fujayrah, Das Island, Khawr Fakkan, Mina'Jabal'Ali, Mina'Khalid, Mina'Rashid, Mina'Saqr, Mina'Zayid, and Umm al Qiwain. There are about 42 fishing villages in the UAE: 23 on the west coast and 19 on the east coast.[471] There are also many small fishing villages where vessels are landed and fish is distributed. The UAE government established 11 workshops throughout the country where local fishermen can obtain free maintenance and repair of their vessels.[472]

The UAE began a $15-million program to upgrade three major fishing ports in the Emirate. The plan calls for construction of cold storage facilities, an ice factory (15 tons per day capacity), shipping services, processing facilities, warehouses, and a 70-shop market. A semi-drydock and expanded jetties were also envisioned in the plans.[473]

Transshipments

The UAE is believed to have transshipped 2 tons of frozen swordfish to the EU in 1991 and negligible quantities of fresh swordfish in 1994.[474]

Processing and products

The UAE is able to export frozen fish products and it is thought that the small quantity exported to the EU in 1991 consisted of gilled or gilled-and-gutted, whole fish.

Companies

The Dubai Islamic Bank Fishing Company is listed as one of the UAE's earliest fishing companies.[475] Cascade Marine Foods was started in 1978, and by 1989 maintained sales to cities throughout the Middle east. The company was making container shipments to Japan, the United States, and to the United Kingdom.[476] Al Aqilli Group of Companies and Reza Traders are listed as being active in 1989.[477]

Trade

A. Imports

The UAE limits imports of fish in order to stimulate the growth of the domestic fishing industry. The UAE reports no imports of swordfish.

B. Exports

The EU reported importing two tons of frozen swordfish from the UAE in 1991 and negligible quantities of fresh swordfish in 1994.[478] These small quantities suggest that these are incidental catches of swordfish.

Future trends

The UAE does not appear to be interested in developing a large tuna fishing industry nor a swordfish fishery. It has not shown any interest in establishing joint venture fisheries with European- or Asian-flag tuna fishing companies and has not negotiated any bilateral fishery agreements. Thus, the UAE is likely to ship only small quantities of swordfish to the EU on an irregular basis. Most of this swordfish probably is caught as an incidental catch in the UAE's tuna or shark fisheries. It is possible that some quantities of swordfish are consumed locally or exported to Asian markets.

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4.8

YEMEN

The Republic of Yemen was established in May 1990, from the merger of the Yemen Arab Republic (North Yemen) and the Peoples Democratic Republic of Yemen (South Yemen). It is located between Saudi Arabia to the north and Oman to the east.

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Fishing grounds

Yemen borders on the Arabian Sea, the Gulf of Aden, and the Red Sea. The country has over 1,906 km of coastline, mostly facing the Indian Ocean.

Fleet

The Republic of Yemen's Ministry of Fishing Resources reports that there are 15 trawlers in the 100-grt to 200-grt range registered in Yemen, but only a few of these are operating. The average age of these vessels is over 10 years. There are approximately 4,000 small, open vessels powered by outboard motors.[479]

Shipyards

Several firms are manufacturing fiberglass open vessels designed for artisanal fishing. No Yemeni shipyards are building fishing or other vessels. No information is available concerning special provision for importation of new or used fishing vessels. The only fishing craft built locally are small fiberglass vessels powered by outboard motors.[480]

Fleet operations and gear

Yemen developed a rudimentary commercial fishery, mainly centered on state-owned corporations based on the Soviet model. The trawlers obtained from the former Soviet Union have all fallen into disrepair

and few if any are still operating. Similarly, the large cold storage plants are not operating and the Soviet-styled fishery corporations have been liquidated. With the help of the UN Development Fund and bilateral donors, Yemen is attempting to develop a coastal-based labor-intensive artisanal fishery.[481] There are about 25,000 fishermen employed in Yemen's fishing industry.

Catch

A. General

Between 1980-84, average fisheries production was 90,000 tons and rose to 104,000 tons from 1985 to 1989. In 1986, peak production was reached totaling 113,200 tons due to increased production by foreign vessels under a catch-sharing agreement with the South Yemen Government in which between 15 to 38 percent of the catch was given to the South Yemen Government. However, production decreased to 77,100 tons in 1990 due to decreased activities of foreign vessels. The average share of catch in 1990 was 40,200 tons to the private sector, 27,300 tons to cooperatives, 3,400 tons to government fishery corporations, and 6,200 tons to foreign investors.[482] The 1993 harvest was 86,800 tons, which represents a slight increase over recent years.[483]

B. Swordfish

Yemeni fishermen caught 26 tons of swordfish using various types of fishing gear in 1983. This declined to 5 tons in 1984 and increased to 16 and 26 tons in 1985 and 1986 respectively. The fishery then ended and no further harvests were reported until 1993 when 22 tons of swordfish were caught by Yemeni fishermen using longline gear.[484]

Ports

Key ports include Aden, Al Hudaydah, Al Mukalla, Mocha and Nishtun.

Transshipments

Yemeni ports do not serve as transshipment points for distant-water fleets.[485] Republic of Korea (ROK) tuna longliners operating in Yemeni waters transship their catches at ports in the United Arab Emirates instead of landing them at Yemini ports.[486]

Processing and products

It is likely that swordfish caught by Yemeni craft are brought ashore fresh or chilled while those caught offshore by foreign-flag vessels are frozen. Swordfish is generally gilled or gilled-and-gutted for sale to the domestic market or for export to distant markets.

Companies

There are 400 fish-processing workers. The fish-processing workers earn an average of 5,000 Yemeni rials per month ($420 at the official exchange rate, or $110 at the normal market exchange rate).[487]

Trade

A. Imports

Yemen is not thought to import swordfish for domestic consumption, but statistical data to support this statement are not available.

B. Exports

Yemen is not believed to export any swordfish harvested by local fishermen, but statistical data to support this statement are not available.

International relations/joint ventures

A. International relations

Yemen had agreements with foreign companies to fish in its EEZ, but these have expired. Although the Yemeni Government has sought to have these companies commit to joint ventures, they have refused. All of the foreign fleet fishing was in the Gulf of Aden. According to Yemen's Ministry of Fish Resources, the Government earned about $1.5 to $2 million a year from these agreements. South Yemen had constant problems with fishing companies from the Republic of Korea, in part because their catches were weighed when they were transshipped at ports in the UAE.[488]

Information is not available regarding bilateral fishery agreements which are now in effect. The Soviets reportedly had such agreements with former South Yemen. Yemen continues to face illegal fishing by Egyptian fishermen in Yemen's Red Sea waters.[489]

B. Joint ventures

To date no joint ventures with foreign companies have been established, although Yemen's Ministry of Fish Resources indicated that the Ministry has received more than fifty inquiries regarding the establishment of joint ventures involving a foreign company. Other inquiries deal with processing and marketing.[490]

Future trends

Yemen is not expected to become a major supplier of swordfish from the Indian Ocean in the foreseeable future.

SOURCES:

FAO, *Indian Ocean Tuna Fisheries Data Summary, 1983-1993,* Indo-Pacific Tuna Development and Management Program, INT/91/025, Colombo, June 1995.

FAO, *Yearbook of Fishery Statistics - Catches and landings, 1993*, Vol. 76, Rome, 1995.

"World Fishing Fleet Study -- Yemen," U.S. Embassy, Sanaa, June 30, 1993.

APPENDIX SECTION

APPENDIX SECTION

PART I. STATISTICAL TABLES

Table 1. AFRICA--Total landings of swordfish in the North and South Atlantic and the Mediterranean Sea by country and quantity, 1965-95.

Year	Algeria	Angola	Bénin	Côte d'Ivoire	Ghana	Liberia	Libya	Morocco	Nigeria	Senegal	South Africa	Togo	Tunisia	Total
	Metric Tons													
1965	0	0	0	0	0	0	224	324	0	0	0	0	0	548
1966	0	0	0	0	0	0	224	253	0	0	0	0	0	477
1967	0	0	0	0	0	0	336	204	0	0	0	0	0	540
1968	0	0	0	0	100	0	560	240	0	0	0	0	0	900
1969	0	0	0	0	200	0	0	270	0	0	0	0	0	470
1970	0	0	0	0	0	0	0	231	0	0	0	0	0	231
1971	0	0	0	0	0	0	0	360	0	0	0	0	0	360
1972	0	0	0	0	0	0	0	273	0	0	0	0	0	273
1973	100	0	0	0	0	0	0	201	0	0	0	0	0	301
1974	196	0	0	0	0	0	0	211	0	0	0	0	5	412
1975	500	0	0	0	0	0	0	133	0	0	0	0	3	636
1976	368	0	0	0	0	0	0	198	0	0	0	0	5	571
1977	370	0	0	0	0	0	0	151	0	0	0	0	0	521
1978	320	0	0	0	0	0	0	183	0	0	0	0	0	503
1979	521	0	0	0	0	0	0	208	0	0	28	0	0	757
1980	650	0	0	0	110	5	0	136	0	0	31	0	0	932
1981	760	0	18	0	5	38	0	124	0	0	9	0	7	961

1982	870	0	24	0	55	34	0	91	0	0	3	0	19	1,096
1983	877	0	0	0	5	53	0	172	83	0	7	0	15	1,212
1984	884	26	86	10	15	0	0	120	69	0	28	0	15	1,253
1985	890	228	90	10	25	24	0	175	0	0	8	6	61	1,517
1986	847	815	39	10	13	16	0	273	0	0	5	32	64	2,114
1987	1,820	84	13	10	123	30	0	237	0	0	5	1	63	2,386
1988	2,621	84	19	12	235	19	0	258	0	0	4	0	80	3,332
1989	590	84	26	7	235	35	0	319	0	1	0	2	159	1,458
1990	712	0	28	10	235	3	0	492	0	0	0	3	176	1,659
1991	562	0	28	21	235	0	0	670	0	6	5	5	181	1,713
1992	395	0	26	15	235	7	0	1,035	3	6	9	5	178	1,914
1993	562	0	28	19	0	14	0	896	0	0	4	8	150	1,681
1994	600	0	0	24	0	26	0	1,068	0	0	1	14	234	1,967
1995	0	0	0	24	0	0	0	625	0	0	0	0	0	649

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/25, Madrid, Spain, 1996.

Table 2. AFRICA--Total landings of swordfish in the North and South Atlantic, by African fishermen, by country and quantity, 1965-95.

Year	Angola	Bénin	Côte d'Ivoire	Ghana	Liberia	Morocco	Nigeria	South Africa	Togo	Total
	Metric Tons									
1965	0	0	0	0	0	100	0	0	0	100
1966	0	0	0	0	0	61	0	0	0	61
1967	0	0	0	0	0	34	0	0	0	34
1968	0	0	0	100	0	43	0	0	0	143
1969	0	0	0	200	0	20	0	0	0	220
1970	0	0	0	0	0	17	0	0	0	17
1971	0	0	0	0	0	33	0	0	0	33
1972	0	0	0	0	0	43	0	0	0	43
1973	0	0	0	0	0	18	0	0	0	18
1974	0	0	0	0	0	15	0	0	0	15
1975	0	0	0	0	0	15	0	0	0	15
1976	0	0	0	0	0	12	0	0	0	12
1977	0	0	0	0	0	7	0	0	0	7
1978	0	0	0	0	0	11	0	0	0	11
1979	0	0	0	0	0	208	0	28	0	236
1980	0	0	0	110	5	136	0	31	0	282
1981	0	18	0	5	38	124	0	9	0	194
1982	0	24	0	55	34	91	0	3	0	207
1983	0	0	0	5	53	129	83	7	0	277
1984	26	86	10	15	0	81	69	28	0	315
1985	228	90	10	25	24	137	0	8	6	528
1986	815	39	10	13	16	181	0	5	32	1,111
1987	84	13	10	123	30	197	0	5	1	463
1988	84	19	12	235	19	196	0	4	0	569
1989	84	26	7	235	35	222	0	0	2	611
1990	0	28	10	235	3	203	0	0	3	482
1991	0	28	21	235	0	192	0	5	5	486
1992	0	26	15	235	7	352	3	9	5	652
1993	0	28	19	0	14	460	0	4	8	533
1994	0	0	24	0	26	335	0	1	14	400
1995	0	0	24	0	0	336	0	0	0	360

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/25, Madrid, Spain, 1996

Table 3. WEST AND SOUTHWEST AFRICA--Total landings of swordfish in the South Atlantic, 1965-95.

Year	Angola	Bénin	Côte d'Ivoire	Ghana	Nigeria	South Africa	Togo	Total
	Metric Tons							
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	100	0	0	0	100
1969	0	0	0	200	0	0	0	200
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	28	0	28
1980	0	0	0	110	0	31	0	141
1981	0	18	0	5	0	9	0	32
1982	0	24	0	55	0	3	0	82
1983	0	0	0	5	83	7	0	95
1984	26	86	10	15	69	28	0	234
1985	228	90	10	25	0	8	6	367
1986	815	39	10	13	0	5	32	914
1987	84	13	10	123	0	5	1	236
1988	84	19	12	235	0	4	0	354
1989	84	26	7	235	0	0	2	354
1990	0	28	10	235	0	0	3	276
1991	0	28	21	235	0	5	5	294
1992	0	26	15	235	3	9	5	293
1993	0	28	19	0	0	4	8	59
1994	0	0	24	0	0	1	14	39
1995	0	0	24	0	0	0	0	24

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/25, Madrid, Spain, 1996.

Table 4. WEST AND NORTH AFRICA--Total landings of swordfish in the North Atlantic, by all types of fishing gear, 1965-95.

Year	Liberia	Senegal	Morocco			Total
			Longline	Other gear	Total	
	Metric Tons					
1965	0	0	14	86	100	100
1966	0	0	12	49	61	61
1967	0	0	11	23	34	34
1968	0	0	13	30	43	43
1969	0	0	16	4	20	20
1970	0	0	14	3	17	17
1971	0	0	21	12	33	33
1972	0	0	15	28	43	43
1973	0	0	10	8	18	18
1974	0	0	12	3	15	15
1975	0	0	15	0	15	15
1976	0	0	12	0	12	12
1977	0	0	6	1	7	7
1978	0	0	11	0	11	11
1979	0	0	208	0	208	208
1980	5	0	136	0	136	141
1981	38	0	124	0	124	162
1983	34	0	91	0	91	125
1983	53	0	125	4	129	182
1984	0	0	79	2	81	81
1981	24	0	137	0	137	161
1986	16	0	178	3	181	197
1987	30	0	192	5	197	227
1988	19	0	195	1	196	215
1989	35	1	219	3	222	258
1990	3	0	28	175	203	206
1991	0	6	27	165	192	198
1992	7	6	37	315	352	365
1993	14	0	54	406	460	474
1994	26	0	39	296	335	361
1995	0	0	n.a.	n.a.	336	336

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/25, Madrid, Spain, 1996.

Table 5. NORTH AFRICA--Total landings of swordfish in the Mediterranean, by all types of gear, 1965-95.

Year	Algeria	Libya	Morocco	Tunisia	Total
	Metric Tons				
1965	0	224	224	0	448
1966	0	224	192	0	416
1967	0	336	170	0	506
1968	0	560	197	0	757
1969	0	0	250	0	250
1970	0	0	214	0	214
1971	0	0	327	0	327
1972	0	0	230	0	230
1973	100	0	183	0	283
1974	196	0	196	5	397
1975	500	0	118	3	621
1976	368	0	186	5	559
1977	370	0	144	0	514
1978	320	0	172	0	492
1979	521	0	0	0	521
1980	650	0	0	0	650
1981	760	0	0	7	767
1982	870	0	0	19	889
1983	877	0	43	15	935
1984	884	0	39	15	938
1985	890	0	38	61	989
1986	847	0	92	64	1,003
1987	1,820	0	40	63	1,923
1988	2,621	0	62	80	2,763
1989	590	0	97	159	846
1990	712	0	289	176	1,177
1991	562	0	478	181	1,221
1992	395	0	683	178	1,256
1993	562	0	436	150	1,148
1994	600	0	733	234	1,567
1995	0	0	289	0	289

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Tenth Special Meetingof the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/26, Madrid, Spain, 1996.

Table 6. NORTH AFRICA--Total landings of swordfish in the Mediterranean, by longline, 1965-94.

Year	Algeria	Morocco	Tunisia	Total
	Metric Tons			
1965	0	223	0	223
1966	0	192	0	192
1967	0	169	0	169
1968	0	196	0	196
1969	0	250	0	250
1970	0	214	0	214
1971	0	326	0	326
1972	0	229	0	229
1973	100	183	0	283
1974	196	193	0	389
1975	500	118	0	618
1976	368	186	0	554
1977	370	144	0	514
1978	320	172	0	492
1979	521	0	0	521
1980	650	0	0	650
1981	760	0	0	760
1982	870	0	0	870
1983	877	43	0	920
1984	884	39	0	923
1985	890	38	0	928
1986	847	92	0	939
1987	1,820	40	0	1,860
1988	2,621	62	0	2,683
1989	590	97	0	687
1990	173	43	0	216
1991	173	24	0	197
1992	6	34	0	40
1993	173	22	145	340
1994	185	85	228	498

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, 1995, p. 63.

Table 7. NORTH AFRICA--Total landings of swordfish in the Mediterranean, by other gear, 1965-94.

Year	Algeria	Libya	Morocco	Tunisia	Total
	Metric Tons				
1965	0	224	1	0	225
1966	0	224	0	0	224
1967	0	336	1	0	337
1968	0	560	1	0	561
1969	0	0	0	0	0
1970	0	0	0	0	0
1971	0	0	1	0	1
1972	0	0	1	0	1
1973	0	0	0	0	0
1974	0	0	3	5	8
1975	0	0	0	3	3
1976	0	0	0	5	5
1977	0	0	0	0	0
1978	0	0	0	0	0
1979	0	0	0	0	0
1980	0	0	0	0	0
1981	0	0	0	7	7
1982	0	0	0	19	19
1983	0	0	0	15	15
1984	0	0	0	15	15
1985	0	0	0	61	61
1986	0	0	0	64	64
1987	0	0	0	63	63
1988	0	0	0	80	80
1989	0	0	0	159	159
1990	539	0	246	176	961
1991	389	0	454	181	1,024
1992	389	0	649	178	1,216
1993	389	0	414	5	808
1994	415	0	648	6	1,069

ICCAT, *Report of the Standing Committee on Research and Statistics (SCRS)*, Fourteenth Regular Meeting of the Commission, Madrid, November 10-17, 1995, COM/95/25, Madrid, Spain, 1995, p. 63.

Table 8. AFRICA AND MIDDLE EAST--Fisheries catch, 1980-1993.

Year	Algeria	Angola	Bénin	Ghana	Côte d'Ivoire	Kenya	Liberia	Libya
	Metric tons							
1980	48,000	85,585	37,832	231,891	85,920	47,723	11,791	12,751
1981	56,000	131,457	37,768	239,894	91,996	57,701	13,004	13,130
1982	64,500	111,988	37,521	242,680	91,221	81,529	13,553	10,315
1983	40,000	110,876	34,628	250,898	94,627	98,138	15,277	7,652
1984	65,587	72,200	35,290	269,101	88,110	91,044	14,650	7,800
1985	66,131	73,997	36,371	276,049	110,662	106,053	11,478	9,695
1986	65,511	57,436	38,753	319,523	104,385	119,896	16,053	9,737
1987	94,368	82,936	41,903	382,020	101,687	131,261	18,731	8,614
1988	106,734	101,783	37,267	361,924	89,506	138,347	16,074	9,682
1989	99,739	111,302	41,860	361,660	99,171	146,521	14,802	7,834
1990	91,111	107,035	41,663	392,777	104,385	201,907	6,463	8,755
1991	80,097	75,201	41,000	366,329	85,112	198,733	9,620	8,095
1992	95,890	74,518	40,000	426,448	87,283	163,227	8,891	8,949
1993	90,460	80,723	39,000	371,227	70,174	185,438	7,782	8,800

Table 8. AFRICA AND MIDDLE EAST--Fisheries catch, 1980-1993 -- continued.

Year	Morocco	Nigeria	Oman	Reunion	South Africa	Togo	Tunisia	Yemen[2]
	Metric Tons							
1980	330,203	261,291	79,000	2,120	853,217	9,134	60,073	75,349
1981	390,505	260,131	83,650	3,573	861,910	10,325	57,376	68,226
1982	363,613	269,712	89,376	5,257	823,565	14,530	62,708	58,131
1983	453,885	272,309	108,766	2,576	935,313	14,556	67,051	63,663
1984	467,485	263,186	105,200	2,648	735,512	14,547	76,588	65,710
1985	473,181	244,490	101,180	2,171	777,136	15,544	91,115	71,310
1986	595,406	271,464	96,354	1,744	821,248	14,530	92,783	72,747
1987	494,153	260,687	136,149	1,958	1,427,208	15,189	99,280	72,418
1988	551,718	279,387	165,676	2,083	1,302,341	15,469	102,570	73,156
1989	520,356	299,703	117,703	1,991	878,486	16,458	95,091	72,866
1990	565,574	316,328	120,239	1,954	537,598	15,800	88,603	77,860
1991	593,064	267,216	117,780	2,252	501,010	12,524	87,617	83,431
1992	548,102	318,384	112,313	2,419	696,394	10,773	88,540	80,733
1993	622,441	255,499	116,472	2,733	563,228	16,988	83,762	86,811

Source: FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993*, Volume 76, Rome, 1995.

[2] Includes the Yemen Arab Republic (North Yemen) and the Peoples Democratic Republic of Yemen (South Yemen) prior to their union as the Yemen Republic in May 1990.

Table 9. EUROPEAN UNION--Imports of swordfish products, from African, Middle Eastern and Indian Ocean countries, by quantity, 1991-95.

Country	Fresh	Frozen			Total
		Whole	Fillets	Meat	
		Metric Tons			
NORTH AFRICA:					
Algeria:					
1991:	2	0	0	0	2
1992:	11	[illegible]	0	0	19
1993:	29	[illegible]	0	0	39
1994:	10	[illegible]	0	0	19
1995:	10	0	0	0	17
Libya:					
1991:	ngl	0	0	0	0
1992:	2	0	0	0	0
1993:	2	0	0	0	0
1994:	2	0	0	0	0
1995:	0	0	0	0	0
Morocco:					
1991:	480	0	ngl	0	480
1992:	763	[illegible]	0	0	767
1993:	716	0	0	0	716
1994:	741	0	0	0	741
1995:	540	0	0	0	540
Tunisia:					
1991:	26	13	0	0	39
1992:	2	ngl	0	0	2
1993:	2	0	0	0	2
1994:	2	0	0	0	2
1995:	negl	0	0	0	0

WEST AFRICA:

Senegal:

1991:	8	5	0	0	13
1992:	7	0	0	0	7
1993:	5	83	0	0	88
1994:	5	35	0	0	40
1995:	1	273	7	0	281

Sierra Leone:

1991:	0	388	0	0	388
1992:	0	462	0	0	462
1993:	0	227	0	0	227
1994:	ngl	74	0	0	74
1995:	0	25	0	0	25

Cape Verde:

1991:	0	0	0	0	0
1992:	ngl	0	0	0	0
1993:	0	0	0	0	0
1994:	0	49	0	0	49
1995:	0	0	0	0	0

Liberia:

1991:	0	0	0	0	0
1992:	0	0	0	0	0
1993:	0	0	0	0	0
1994:	1	0	0	0	1
1995:	0	0	0	0	0

Côte d'Ivoire:

1991:	ngl	0	0	0	0
1992:	2	0	0	0	2
1993:	ngl	0	0	0	0
1994:	ngl	108	5	0	113
1995:	0	0	1	0	1

Ghana:					
1991:	0	29	0	0	29
1992:	0	40	0	0	40
1993:	0	40	0	0	40
1994:	0	6	0	0	6
1995:	2	1	0	0	3
Guinea:					
1991:	0	0	0	0	0
1992:	0	0	0	0	0
1993:	0	0	0	0	0
1994:	0	0	0	0	0
1995:	0	179	0	0	179
Togo:					
1991:	0	0	0	0	0
1992:	0	0	1	0	1
1993:	ngl	1	0	0	1
1994:	0	ngl	0	0	0
1995:	0	10	0	0	10
Namibia:					
1991:	0	0	0	0	0
1992:	0	0	0	0	0
1993:	0	14	0	0	14
1994:	0	668	0	0	668
1995:	0	182	0	0	182
EAST AFRICA AND INDIAN OCEAN:					
Kenya:					
1991:	0	36	0	0	36
1992:	ngl	0	0	0	0
1993:	0	0	0	0	0
1994:	0	54	0	0	54
1995:	0	0	0	0	0
South Africa:					

1991:	0	579	11	0	590
1992:	0	644	ngl	0	644
1993:	0	740	0	0	740
1994:	0	1079	22	0	1,101
1995:	0	660	22	0	682
Réunion:[3]					
1991:	0	26	0	0	26
1992:	9	0	0	0	9
1993:	39	21	0	0	60
1994:	248	133	0	0	381
1995:	171	101	29	0	301
Seychelles:					
1991:	ngl	8	0	0	8
1992:	ngl	0	1	0	1
1993:	ngl	0	ngl	0	0
1994:	ngl	0	2	ngl	2
1995:	4	12	0	0	16
Mauritius:					
1991:	0	112	0	0	112
1992:	0	344	0	0	344
1993:	0	531	0	0	531
1994:	1	1524	0	0	1,525
1995:	0	377	0	0	377
Oman:					
1991:	0	0	0	0	0
1992:	0	0	7	0	7
1993:	1	0	3	2	6
1994:	2	0	0	0	2
1995:	0	0	0	0	0
United Arab Emirates:					
1991:	0	2	0	0	2

[3] La Réunion is an Overseas Department of France and is considered an integral part of France.

1992:	0	0	0	0	0
1993:	0	0	0	0	0
1994:	ngl	0	0	0	0
1995:	0	0	0	0	0
TOTAL:					
1991:	516	1,198	11	0	1,725
1992:	794	1,499	9	0	2,302
1993:	792	1,664	3	2	2,461
1994:	1,010	3,739	29	0	4,778
1995:	735	1,820	59	0	2,435

Table 10. UNITED STATES--Imports of swordfish from Africa, by quantity, 1980-95.

Year	Senegal	Ghana	Côte d'Ivoire	Morocco	South Africa
	Metric Tons				
1980	0	0	0	0	0
1981	0	0	0	0	0
1982	0	0	0	0	1.1
1983	0.9	0	0	0	0
1984	0	0	0	0	0
1985	0	0	0	0.9	0
1986	0	0	1.3	0.2	0.9
1987	0	0.9	0	0	0
1988	0	0	0	0.1	0
1989	0	0	0	0	0
1990	0.9	0	0	0	0
1991	0.9	0	0	0	0
1992	0.9	0	0	0	0
1993	0	0	0	0	0
1994	0	0	0	0	22.4
1995	0	0	0	0	159

Source: U.S. Bureau of the Census

Table 11. JAPAN--Exports of swordfish to African and Indian Ocean countries, by quantity and value, 1985-92.

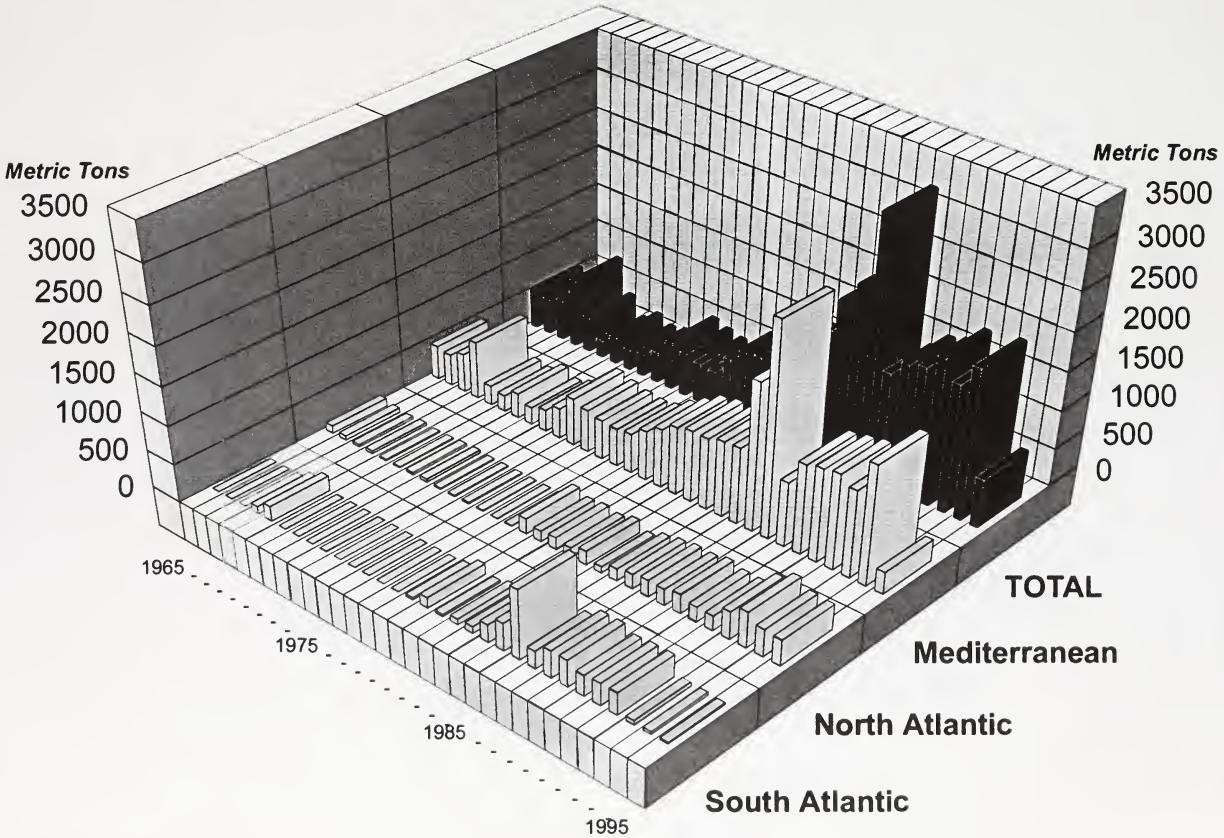
Country	1985		1986		1987		1988		1989		1990		1991		1992	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Canary Islands	14	10	15	9	0	0	6	11	5	9	9	32	0	0	0	0
Mauritius	4	4	6	6	0	0	0	0	0	0	0	0	41	197	134	529
South Africa	31	53	26	55	12	28	30	65	29	55	86	154	52	100	68	158
Total	49	67	47	70	12	28	36	76	34	64	95	186	93	297	202	687

Quantity is in metric tons and value in US$1,000 FOB Japan. Source: Japanese Ministry of Finance. Note: The Canary Islands are a part of Spain.

APPENDIX SECTION

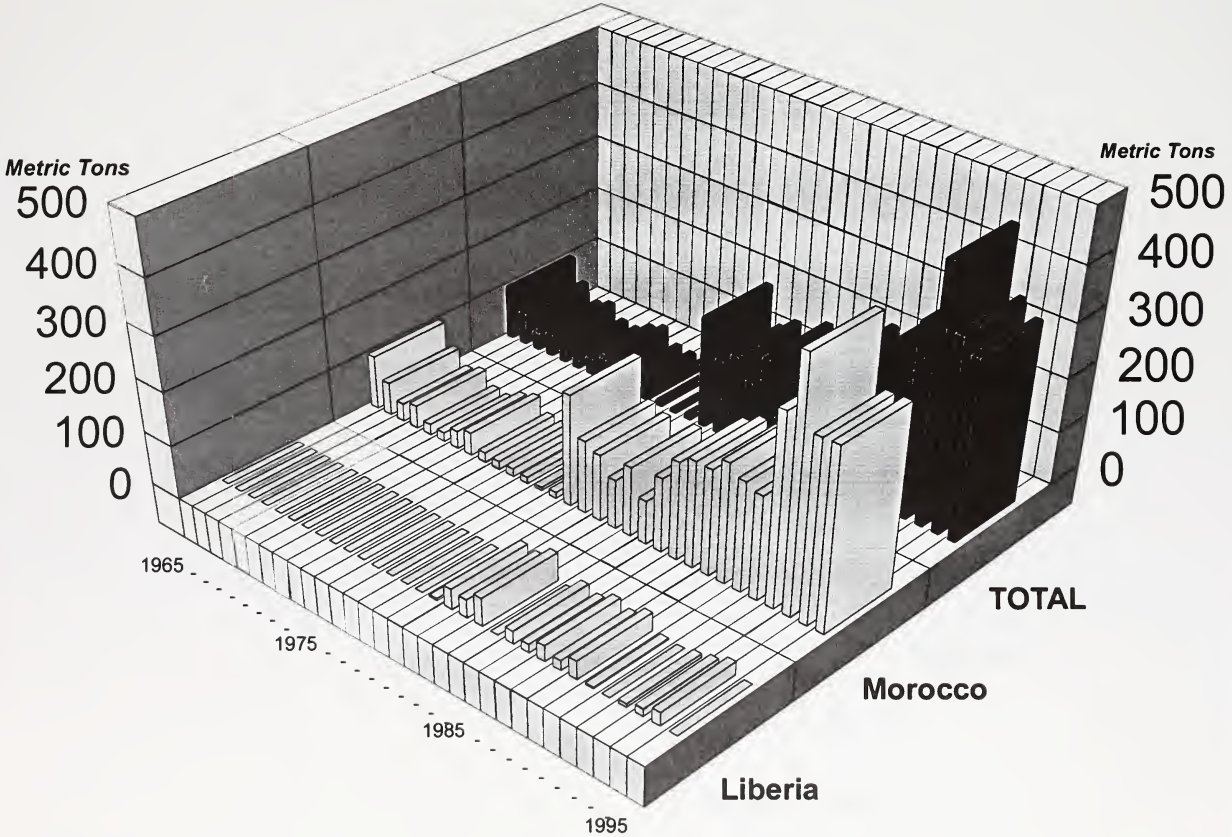
PART II. GRAPHICS

Fig. 1. AFRICA--Catch of swordfish, by major fishing area, using all types of gear, 1965-95.



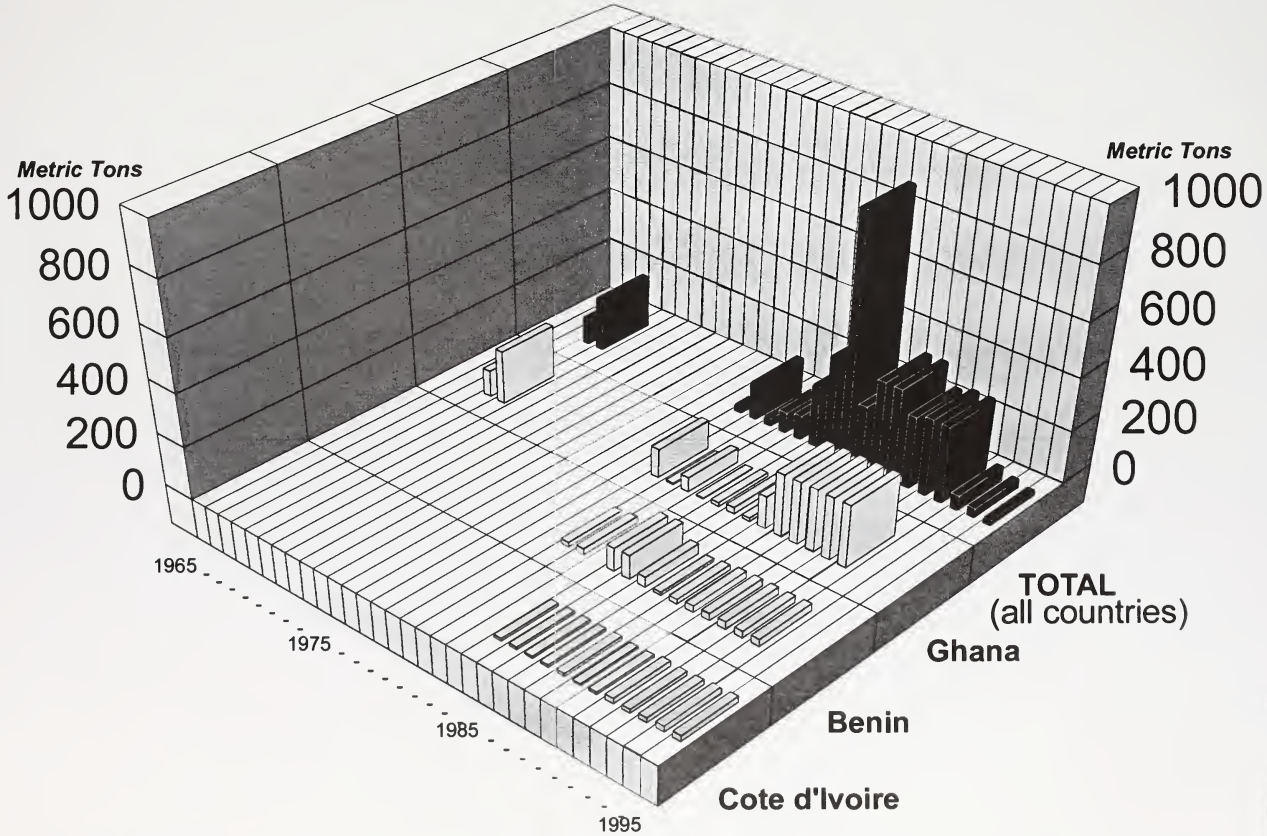
Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

Fig. 2. AFRICA--Catch of swordfish, in the North Atlantic, using all types of gear, 1965-95.



Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

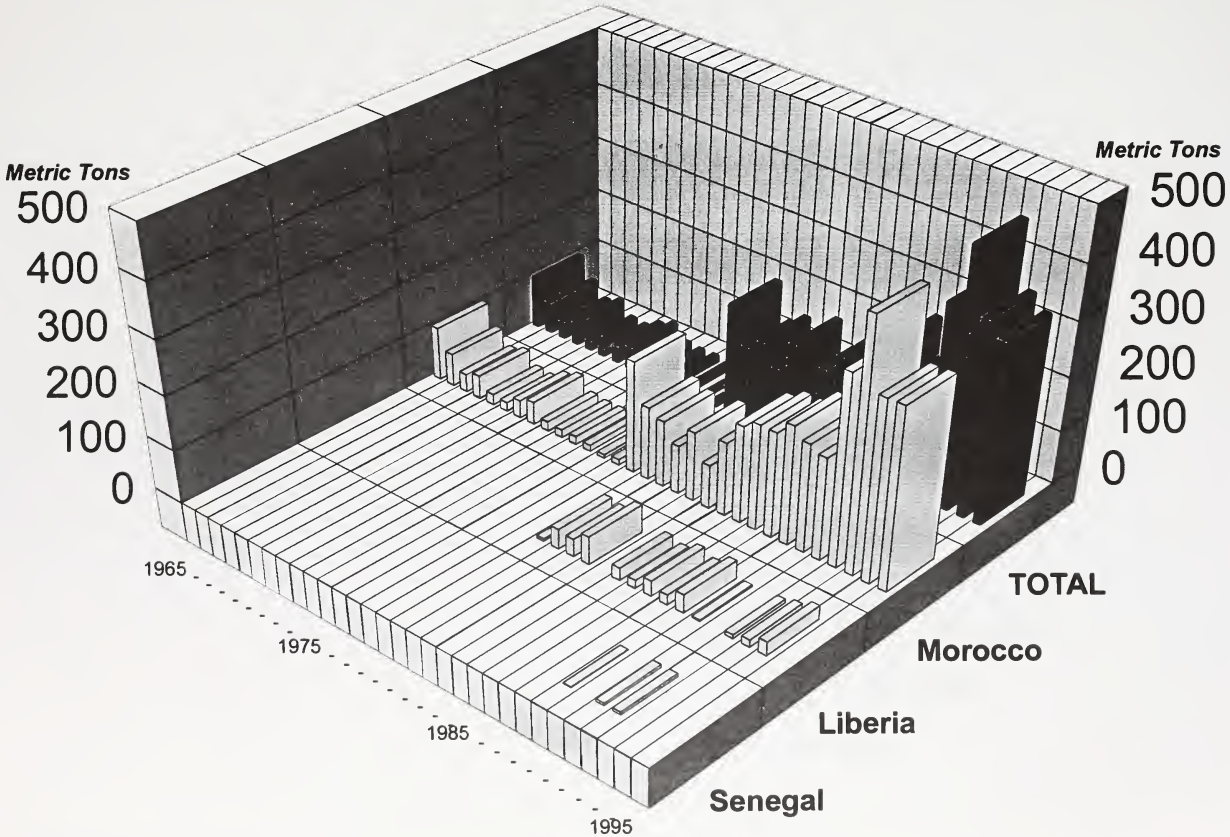
Fig. 3. AFRICA--Catch of swordfish in the South Atlantic by three leading fishing nations, 1965-95.



Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

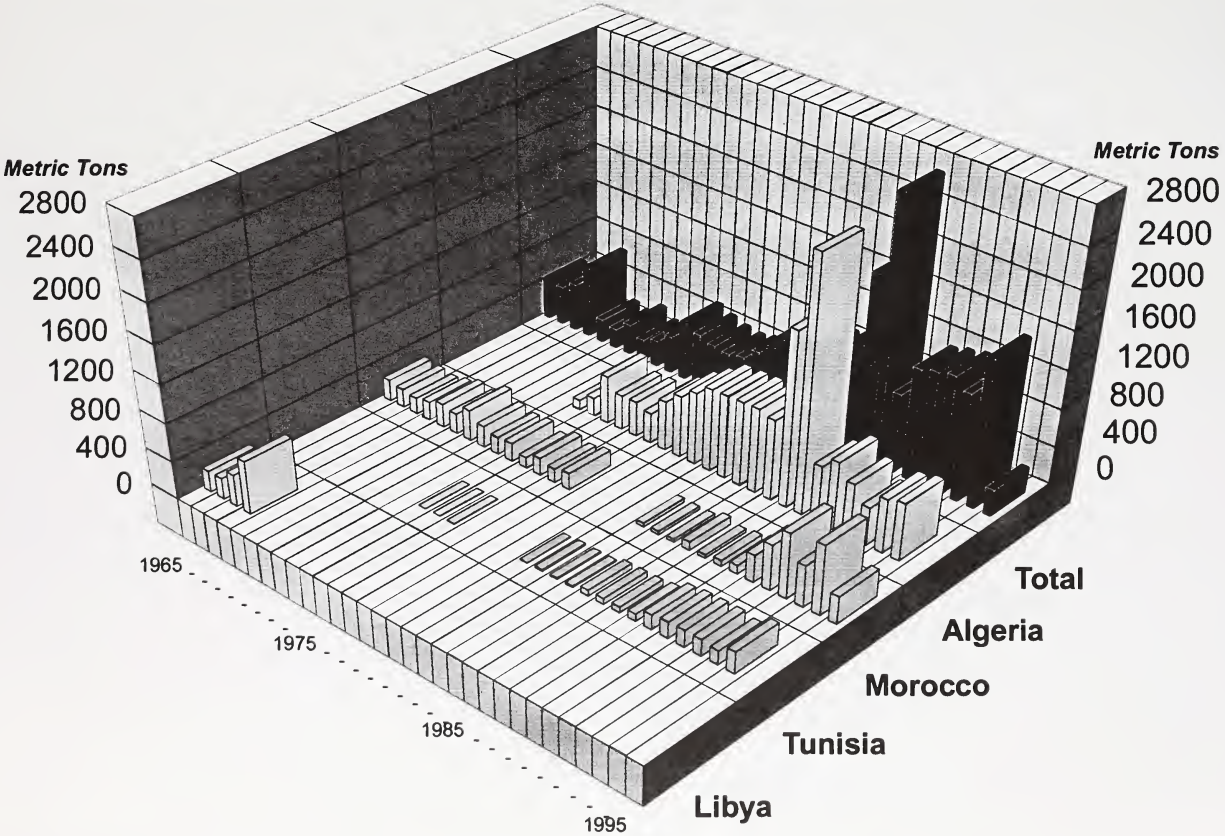
Note: Large landings in 1986 were made in Angola's fisheries.

Fig. 4. AFRICA--Catch of swordfish in the North Atlantic by Liberia, Morocco, and Senegal, 1965-95.



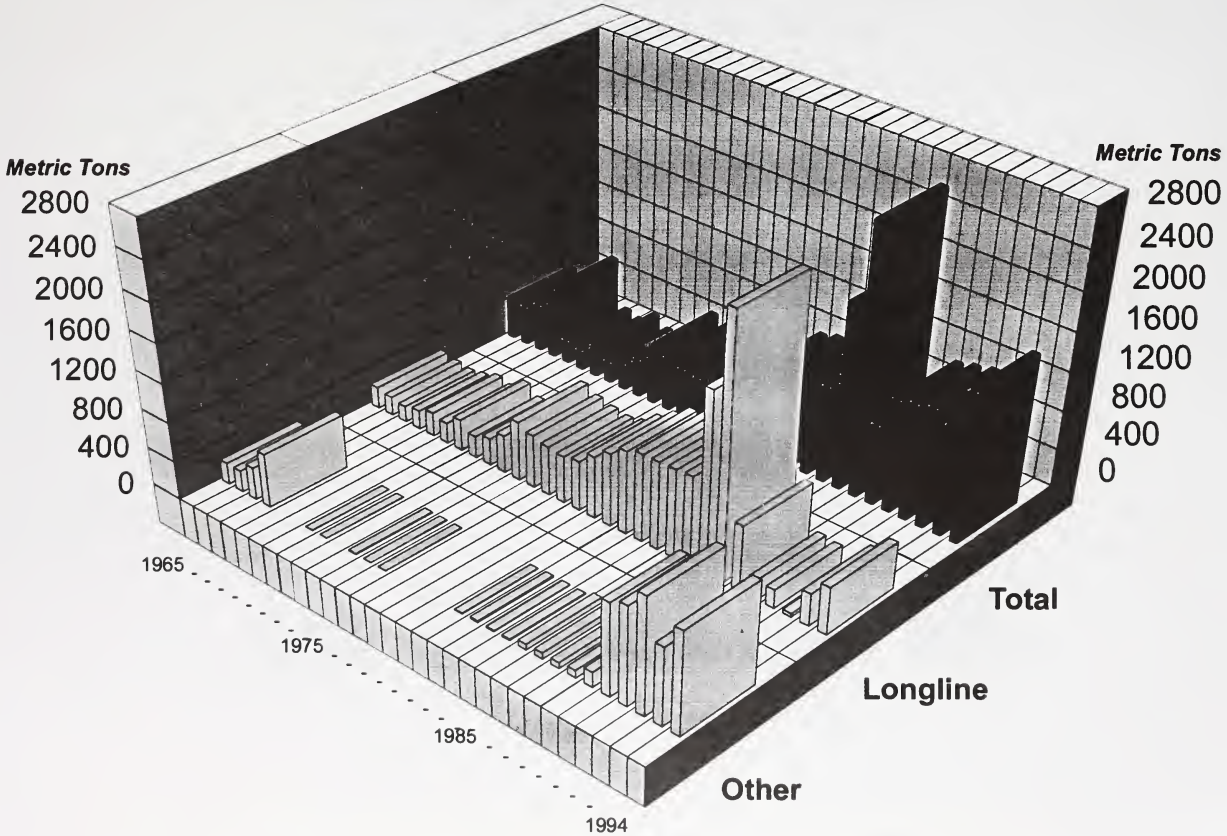
Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

Fig. 5. NORTH AFRICA--Catch of swordfish in the Mediterranean, 1965-95.



Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

Fig. 6. NORTH AFRICA--Catch of swordfish in the Mediterranean, by fishing gear, 1965-94.



Source: ICCAT, *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/06/26, Madrid, Spain, 1996 and FAO, unpublished report.

Fig. 7. EUROPEAN UNION--Imports of swordfish from Africa, by product form, 1991-95

Source: EUROSTAT data.

APPENDIX SECTION

PART III. MAPS

AFRICA.001/49B

EAST AFRICA.007/49B

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APPENDIX SECTION

PART V. ENDNOTES

1. Quantities are shown in metric tons or kilograms (kg).

2. This is for statistical purposes. The South Atlantic Ocean obviously extends across the globe to South America while the North Atlantic includes North America. This portion of the study examines the waters off the coast of the African continent.

3. Jacques Brulhet, "The Ivorian tuna industry - present crisis and future prospects," *INFOFISH Marketing Digest*, No. 2/86, p.33 writes about swordfish being caught by Japanese longliners in the southern Atlantic being shipped to Spain and Italy. It was not stated in the article, but the swordfish was presumably shipped through the port of Abidjan which was the focus of the article.

4. EUROSTAT data. Prior to 1991, the EU did not report imports of swordfish as a distinct species.

5. Japanese Ministry of Finance. Value is FOB Japan.

6. International Commission for the Conservation of Atlantic Tunas (ICCAT), *Report of the Standing Committee on Research and Statistics* (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22 to 29, 1996, COM/95/25, Madrid, Spain, 1996.

ANGOLA:

7. Dennis M. Weidner and Susan D. Foster, *Fisheries of Angola, 1974-76*, Foreign Fisheries Leaflet No. 77-6, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C., November 1977, p. 1.

8. Personal communication with Angolan fishery officials at the meeting of the International Commission for the Exploration of the Sea (ICES) in Alborg, Denmark in 1995 and Andrew I.L. Payne *et. al.*, *Oceans of Life off Southern Africa*, Vlaeberg Publishers, Cape Town, S.A., 1989.

9. International Center for Marine Resource Development, *Angola: Fishery Profile*, the University of Rhode Island, Kingston, RI. This is one of the more recent publications on Angola's fisheries.

10. W.A. Wilkinson, "Country Profile: Angola," *World Fishing,* February 1989, p. 26.

11. Salvatore di Palma, *The Marine Fisheries of Angola, 1969*, Foreign Fisheries Leaflet #20, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C., April 1970, p 5.

12. Wilkinson, W.A., *Op. Cit.*, p. 27.

13. Weidner, Dennis M. and Foster, Susan D., *Op.Cit.*, p. 1.

14. Food and Agriculture Organization (FAO) of the United Nations (UN), *Yearbook of Fishery Statistics - Catches and landings, 1993*, Vol. 76, Rome, 1995, p. 555.

15. ICCAT, *Statistical Bulletin,* Vol. 24, 1993, Madrid, Spain, 1994, p. 83. The data for the years 1984-87 are not reflected in other ICCAT publications cited in this report.

16. Wilkinson, W. A., *Op.Cit.*, p. 27.

17. FAO, *Op. Cit.*, pp. 20-21.

18. *Ibid.*, pp. 20-21.

19. W.A. Wilkinson, *Op.Cit.*, p. 26.

20. "Angola: Fishery Profile," International Center for Marine Resource Development, the University of Rhode Island, Kingston, RI, and FAO, *Yearbook of Fishery Statistics - Catches and landings, 1988*, Vol. 66, Rome, 1989, p. 377.

21. "Accords Bilateraux de Pêche," Acts of the First Ministerial Conference on High Seas Cooperation of Coastal Atlantic African States, March 30-April 1, 1989, Rabat, Morocco, p. 134.

22. "Accords Bilateraux de Pêche,"*Op.Cit.*, p. 135.

23. *Ibid*, p. 137.

24. "Fisheries Minister Describes 'Crisis' Situation," *Jornal de Angola* in Portuguese, March 6, 1992, p. 3.

25. "Accords Bilateraux de Pêche,"*Op.Cit.*, p. 136.

26. *Ibid*, p. 137.

27. *Ibid*, p. 137.

28. U.S. Embassy, Brussels, May 6, 1987.

29. *Official Journal of the European Communities,* Council Decision of 28 July 1989, on the conclusion of the Agreement in the form of an Exchange of Letters on the provisional application of the Protocol defining, for the period 3 May 1989, to 2 May 1990, the fishing opportunities and financial compensation provided for in the Agreement between the European Economic Community and the Government of the People's Republic of Angola on fishing off Angola, (89/486/EU), No L 239/91, July 16, 1989.

30. U.S. Embassy, Brussels, August 4, 1989.

31. *Official Journal of the European Communities,* Council Decision of 27 June 1990, on the conclusion of the Agreement in the form of an Exchange of Letters on the provisional application of the Protocol establishing, for the period from 3 May 1990, to 2 May 1992, the fishing opportunities and financial compensation provided for in the Agreement between the European Economic Community and the Government of the People's Republic of Angola on fishing off Angola, (90/409/EU), No L 208/41, July 7, 1990.

32. W.A. Wilkinson,*Op.Cit*, p. 26.

33. Encarnacao Viegas, "Portuguese Companies Sign Fishing Contract," *Diario de Noticias*, in Portuguese, October 10, 1989, p. 4.

34. Angola: Fishery Profile," International Center for Marine Resource Development, the University of Rhode Island, Kingston, RI.

35. Manuel de Sousa Andrade, "La Pesca Industrrial en Angola, Hoy," *Industrias Pesqueras*, May 15, 1991, p. IP-25.

36. Manuel de Sousa Andrade, *Op.Cit.*, p. IP-25.

37. *Ibid,* p. IP-25.

BÉNIN:

38. A. Aziablé, "Rapport Succinct sur la Pêche en Republique Populaire du Bénin," *National Management and Research Reports*, Eastern Central Atlantic Fisheries, CECAF/TECH/84/61, December 1984, pp. 43-46.

39. Ferdinand de Roland and Antonie Honvou, "Rapport sur la Peche et la Pisciculture," Tome Annexe VI, Etude de'Avenir du Secteur Rural, Direction des Etudes et de la Planification, Ministere du Developpement Rural et de l'Action Cooperative, Republic Popular du Bénin, April 1989, p. 9.

40. A Libya-Bénin joint venture company established in 1980.

41. Ferdinand de Roland and Antonie Honvou, *Op.Cit.*, p.9.

42. *Ibid*, p.17.

43. *Ibid*, p.2.

44. F. Gerlotto, M.A. Mensah, and B. Stequert, "La pêche au Ghana," *La Peche Maritime*, January 20, 1979, p. 29. This net is also known as "nifa-nifa."

45. Ferdinand de Roland and Antonie Honvou, *Op.Cit.*, p.19.

46. *Ibid*, p.20.

47. *Ibid.*

48. "Responses to World Fishing Fleet Study," U.S. Embassy, Cotonou, July 2, 1993.

49. FAO, *Bénin*, Fishery Country Profile, FAO, Rome, August 1981, p. 3.

50. The U.S. Embassy reports that Beninese regulations stipulate that vessels solely engaged in commercial fishing may be no more than 18 m in length, and have an engine no larger than 235-horsepower. Vessels which catch both fish and shrimp, however, may be up to 25-m in length and have up to 400-horsepower engines. In order to obtain a permit to fish in Beninese waters, an application must be jointly submitted to the Ministry of Rural Development and the Ministry of Transportation. This application must include: documents for the entire crew, the vessel registration certificate from the builder (certifying the length, tonnage, and age of the vessel), a registration number indicating that the vessel owner has registered with the Beninese Chamber of Commerce, and financial information about past fishing activities in Beninese waters. Once this application is submitted to the aforementioned ministries, the vessel must undergo an inspection performed by the Autonomous Port of Cotonou (PAC); this inspection seeks to ensure that both the fishing gear and the safety/navigation systems of the vessel are in working order.

When this process is completed, the vessel owner must satisfy two financial requirements. First, a tariff must be paid to the Government of Bénin (based upon the size of the vessel, capacity of equipment, planned catch of the vessel, and other factors); the minimum tariff is 5,000 CFA francs. This tariff is paid annually. Second, a bond must be posted with a Cotonou bank against the violation of Beninese fishing/environmental laws by the fishing vessel. This bond varies in amount according to the size and age of the vessel, ranging from 300,000 CFA francs to 5,600,000 CFA francs. Though in principle fines are to be deducted from this bond for infractions, Government of Bénin fishery officials reported that (in their memories) all bonds posted had been refunded in full. The U.S. Embassy was unable to verify this fact.

Finally, once the application has been approved, the vessel has been certified as sound by the PAC, and all financial obligations have been met, the vessel owner must apply for a temporary "authorization" (renewable each 30-60 days) to fish in Beninese territorial waters. This authorization is free, and (according to the Government of Bénin fisheries officials), is simply to ensure that vessels wishing to fish continue to conform with Government of Bénin reporting, inspecting, and local sale requirements.

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51. T. Joanny, J.B. Amon Kothias, and F.X. Bard, "Standardized Indices of Abundance, 1988-1994, for Billfish (Sailfish, Blue Marlin) and Swordfish (*X. Gladius*) off Côte d'Ivoire," ICCAT, *Collective Volume of Scientific Papers,* Vol. XLIV (3), ICCAT, Madrid, Spain, 1995, p. 32.

52. Sophie Chegaray, "Future of Fishing Industry Studied," *Fraternite-Matin*, July 28-August 1, 1980. Upwellings provide nitrates, nitrites, phosphates and other minerals that nourish the plankton used by fish and shellfish as a source of food. This is especially important to juvenile fish, such as sardines, that are popular throughout West Africa.

53. "New French ships join W. Africa tuna fleet," *Fishing News International*, April 1980, p. 41.

54. T. Joanny, J.B. Amon Kothias, and F.X. Bard,*Op.Cit.*, p. 32.

55. *Ibid*, p. 32.

56. Sophie Chegaray, *Op.Cit.*

57. The Tuna Fishery of Côte d'Ivoire, *International Fisheries Report*, 80/179, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C. November 6, 1980.

58. "World Swordfish Fisheries Study," U.S. Embassy, Abidjan, June 9, 1995.

59. Jacques Brulhet, "The Ivorian tuna industry - present crisis and future prospects," *INFOFISH Marketing Digest*, No. 2/86, p. 34.

60. Direction des Peches, Abidjan, Rapports d'activite.

61. *Official Journal of the European Communities*. "Proposal for a Council Regulation (EEC) on the conclusion of the Agreement between the European Economic Community and the Republic of the Côte d'Ivoire on fishing off the Côte d'Ivoire," COM(90) 374 final, August 3, 1990.

62. "World Swordfish Fisheries Study," *Op.Cit.*

63. *Ibid.*

GHANA:

64. Garry M. Bernacsek, *Profile of the Marine Resources of Ghana*, Program for the Development of Fisheries in the Eastern Central Atlantic, FAO, Dakar, May 1986 (CECAF/TECH/86/71), p.1.

65. *National Report of Ghana*, ICCAT, Report for the biennial period, 1988-89, Part II (1989), English version, Madrid, Spain, 1990, p. 392.

66. *National Report of Ghana*, *Op.Cit.*, p. 392.

67. William B. Folsom, *Fisheries of Ghana*, U.S. Consulate General, Casablanca, Morocco, unpublished report.

68. Janet Milhomme, "Ghana's Canoe Fishermen Paddle into the Future," *Seafood Leader*, May/June 1989, p. 142.

69. Garry M. Bernacsek, *Op.Cit.*, p. 7.

70. Janet Milhomme, *Op.Cit.*, p. 142.

71. F. Gerlotto, M.A. Mensah, and B. Stequert, "La pêche au Ghana," *La Peche Maritime*, January 20, 1979, p. 29. This net is also known as "nifa-nifa."

72. This probably reflects difficulty in gathering statistics from an artisanal fleet operating in remote fishing villages up and down the coast of Ghana.

73. *National Report of Ghana*, *Op.Cit.*, p. 392.

74. Ibid., p. 392.

75. Garry M. Bernacsek, *Op.Cit.*, p.42.

76. Gary T. Sakagawa and Atilio L. Coan, *Species Composition of U.S. Tuna Imports from the Tema-based Pole-and-Line Fleet, 1976-1985*, Administrative Report LJ-87-13, National Marine Fisheries Service, NOAA, Southwest Fishereis Center, La Jolla, CA, June 1987.

77. Kumah Drah, "Why Ghana's fisheries need investment," *Fishing News International*, September 1990, p. 53.

78. "Possible U.S.-West African Fisheries Initiative," U.S. Embassy, Accra, September 12, 1983, (Declassified)

79. Kumah Drah, *Op.Cit.*, p. 53.

80. *Ibid*, p. 53.

81. For a good description of Ghana's tuna fisheries see Gary T. Sakagawa and Atilio L. Coahn, *Species Composition of U.S. Tuna Imports from the Tema-based Pole-and-Line Fleet, 1976-1985*, Administrative Report LJ-87-13, National Marine Fisheries Service, NOAA, Southwest Fishereis Center, La Jolla, CA, June 1987.

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82. Jörg Rüdiger, "Namibia: a giant awakes," *Seafood International*, May 1994, p. 23 and Michael Stuttaford, Editor, *South African Fishing Industry Handbook and Buyer's Guide, incorporating Namibia, 1993*, 21st Edition, Stellenbosch, South Africa, 1993, p. 49.

83. "Government Quota Announcement Sparks Concern," U.S. Embassy, Windhoek, December 14, 1994.

84. "Namibian Fishing Riding the Waves," U.S. Embassy, Windhoek, December 15, 1995.

85. FAO, *Fishery Country Profile - Namibia*, Rome, March 1993, p. 2.

86. These vessels fish for snoek, kabeljou, steenbras, and a few other species.

87. FAO, *Op.Cit.*, p. 2.

88. *Ibid,* p. 2.

89. Based on an exchange rate of US$1.00 = 3.55 South African Rand as of December 31, 1994.

90. Michael Stuttaford, Editor, *South African Fishing Industry Handbook and Buyer's Guide, incorporating Namibia, 1993*, 21st Edition, Stellenbosch, South Africa, 1993, p. 49.

91. FAO, *Op.Cit.*, p. 2.

92. FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993,* Volume 76, Rome, 1995, pp. 566-567.

93. Jörg Rüdiger, *Op.Cit.*, p. 25. Note: The FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993,* Volume 76, Rome, 1995, pp. 566-567 does *not* show any landings of tuna for the years 1990-93. Michael Stuttaford, *Op.Cit.*, p. 54 reports Namibia's tuna catch as 216 tons in 1991.

94. Michael Stuttaford, *Op.Cit.*, p. 66.

95. South Africa and Namibia signed a treaty on February 28, 1994, effective March 1, 1994, transferring sovereignty over Walvis Bay and 13 offshore islands to Namibia. William B. Wood, The Geographer, Department of State, Guidance Bulletin, No. 14, June 18, 1994.

96. FAO, *Fishery Country Profile - Namibia*, *Op.Cit.*, p. 3.

97. Jörg Rüdiger, *Op.Cit.*, p. 23.

98. *Ibid.*, p. 23.

99. *Ibid*, p. 24.

100. EUROSTAT data.

101. U.S. Embassy, Windhoek, November 2, 1990. An attempt to regulate fishing was begun in 1969 by the FAO and later with the creation of ICSEAF in 1978.

102. ECU 100 million. *Eurofish Report,* May 24, 1990.

103. U.S. Embassy, Windhoek, November 2, 1990.

104. U.S. Embassy, Windhoek, April 16, 1991.

105. "Productive fishing at Walvis Bay," *Partnership,* No. 14, July/August 1994.

106. "Namibian Fishing Riding the Waves," U.S. Embassy, Windhoek, December 15, 1995.

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107. 1991 Fishing Industry Report, U.S. Embassy, Lagos, Nigeria, October 21, 1991.

108. 1991 Fishing Industry Report, *Op.Cit.*

109. "World Fishing Fleet Study - Nigeria," U.S. Embassy, Lagos, July 2, 1993.

110. 1991 Fishing Industry Report, *Op.Cit.*

111. *Ibid*

112. FAO, *Yearbook of Fishery Statistics - Commodities, 1993,* Vol. 77, Rome, 1995, p. 83.

113. *Ibid*, p. 83.

114. "World Fishing Fleet Study - Nigeria," *Op.Cit.*

115. *Ibid.*

116. *Ibid.*

117. *Ibid.*

118. *Ibid.*

SAINT HELENA:

119. David Gollan, "Slow Boat to the South Atlantic," *The Washington Post,* February 4, 1996, p. E13.

120. FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993*, Volume 76, Rome, 1995, p. 568.

121. David Gollan, *Op.Cit.*, p. E12.

122. *Ibid*, p. E13.

123. EUROSTAT data.

SOUTH AFRICA:

124. Recreational fishing for billfish has been popular off Natal since at least 1988-89, when swordfish was reported being caught by sportsfishermen. Andrew I.L. Payne, *et. al.*, in *Oceans of Life off Southern Africa*, Vlaeberg Publishers, Cape Town, S.A., 1989, p. 194.

125. A.J. Penney, Sea Fisheries Research Institute, "National Report on Tuna Fishing and Research Conducted by South Africa During 1994," *National Reports,* ICCAT, COM/95/33, Madrid, Spain, 1995.

126. The Broadbill Foundation, Cape Town, South Africa, fax dated April 15, 1996.

127. A.J. Penny, *Op.Cit.*. Longline fleets from "distant countries" have taken "moderate" catches of billfish off southern Africa since at least 1988-89. This was reported by Andrew I.L. Payne, *et. al.*, in *Oceans of Life off Southern Africa*, Vlaeberg Publisheres, Cape Town, S.A., 1989, p. 194.

128. The Broadbill Foundation, *Op.Cit.*

129. *Ibid.*

130. *Constitution of The Broadbill Foundation*, P.O. Box 79, Woodstock, Cape Town, South Africa 7915, March 1995.

131. Discussions with Mrs. Joelle Row, Administrative Officer, The Broadbill Foundation, on April 3, 1996.

132. Japanese Ministry of Finance. See the Asian volume for additional details on Japan's trade in swordfish products.

133. U.S. Bureau of the Census.

134. *Ibid.*

135. *Ibid*

136. The Broadbill Foundation, *Op.Cit.*

137. A.J. Penney, *Op.Cit.*

138. Michael Stuttaford, *Op.Cit.* p. 17. The author is unable to explain how this fleet of Japanese and Taiwanese vessels was able to fish in South African waters after the agreement was revoked.

TOGO:

139. FAO, *Fish Supplies Bulletin, Togo*, INFOPECH, Abidjan, August 1989.

140. FAO, *Op.Cit.*

141. Presentation de l"annuaire Statistique, Republic du Togo

142. FAO, *Op.Cit.*

143. *Ibid.*

144. *Ibid.*

145. "Lome-based Greek Fishing Vessel Seized in Ghana," U.S. Embassy, Lomé, April 25, 1989.

146. *Fish Supplies Bulletin*, December 1988

147. FAO, *Yearbook of Fishery Statistics - Commodities, 1993*, Vol. 77, Rome, 1995, p. 98.

148. "Lome-based Greek Fishing Vessel Seized in Ghana," *Op. Cit.*

CANARY ISLANDS:

149. The largest island is Tenerife (2,053 km^2) which has a major fishing port at Santa Cruz de Tenerife. The island of Gran Canaria (1,532 km^2) is famous for its modern port facilities at Las Palmas which serve as a major transshiping point for fishing vessels from all over the world. The other islands include: Fuerteventura (2,019 km^2), Lanzarote (795 km^2), la Palama (728 km^2), Gomera (378 km^2), and Hierro (278 km^2).

150. Port of La Luz and Las Palmas, Junta del Puerto de la Luz y Las Palmas, Las Palmas de Gran Canaria, Canary Islands.

151. Carlos Bas, "Canarias y sus posibilidades pesqueras," *Industrias Pesqueras*, December 15, 1987, p. 10.

152. Port of La Luz and Las Palmas, *Op.Cit.*

153. *Ibid.*

154. Japanese Ministry of Finance. Value shown is FOB Japan.

155. EUROSTAT data.

CAPE VERDE:

156. The northern group of islands (ilhas do Barlavento) include: Santo Antão, São Vicente, Santa Luzia, São Nicolãu, Sal, and Boa Vista. The southern group (ilhas do Sotavento) include: Maio, São Tiego (or Santiago), Fogo, and Brava. Branco, Razo, and the Ilheus Secos are the smaller islets.

157. "Cape Verde - international fish base," *Fishing News International,* August 1972, p. 33.

158. Secretaria de Estado das Pescas, *Estatistica das Pescas*, Instituto Nacional de Investigação das Pescas, Republica de Cabo Verde, 1989, p.7.

159. Peter Hjul, "Small boats supply the fish...and tuna is the money catch," *Fishing News International,* August 1962, p. 37.

160. Peter Hjul, *op.cit.*, p. 37.

161. Secretaria de Estado das Pescas, 1989, *Op.Cit.*, pp. 81-82.

162. David Thompson, "Cape Verde - The Forgotten Islands, *World Fishing*, January 1996, pp.13-14.

163. "Cape Verde orders 20 tuna vessels," *World Fishing*, September 1993, p. 62.

164. "Cape Verde - international fish base," *Op.Cit.,* p. 33. There is no information as to the current status of these dry docks.

165. "Cap Verde orders 20 tuna vessels," *Op.Cit.*, p. 62.

166. Secretaria de Estado das Pescas, 1989, *Op.Cit.*, pp. 24,33,37,95,97,99,103, and 107.

167. FAO, *Yearbook of Fishery Statistics - Catches and Landings*, 1993, Volume 76, Rome, 1995, p. 557. Curiously, ICCAT does *not* list any swordfish harvests by Cape Verde for that year and ICCAT data is usually very detailed.

168. Peter Hjul, *Op.Cit*, p. 36.

169. Fishery Committee for the Eastern Central Atlantic (CECAF), "An Overview of Current Development Trends in the CECAF Region," Sub-Committee on Fishery Development, Sixth Session, Banjul, The Gambia, October 11-13, 1984, CECAF:FD/VI/84/In.4.

170. "Details on tuna fishing agreement with Spain," Praia *VOZ DI POVO* in Portuguese October 7, 1981, p. 12.

171. David Thomson, *Op. Cit.*, pp. 12-14.

GUINEA:

172. Central Intelligence Agency, *The World Factbook, 1995*, Office of Public and Agency Information, Washington, DC. 20505, 1996.

173. FAO, *Yearbook of Fishery Statistics - Catches and Landings*, 1993

174. ICCAT, Report of the Standing Committee on Research and Statistics (SCRS), Tenth Special Meeting of the Commission, San Sebastian, Spain, November 22-29, 1996, COM/96/25, Madrid, Spain, 1996.

175. Central Intelligence Agency, *Op.Cit.*

LIBERIA:

176. "Liberia: Fishery Profile," International Center for Marine Resource Development, The University of Rhode Island, Kingston, RI.

177. "Liberia: Fishery Profile," *Op. Cit.*

178. *Ibid.*

179. *Ibid.*

180. In 1991, it was reported that three Japanese-style tuna longliners had been delivered to Pecheur Overseas Inc. by the Astilleros Gondan SA shipyard at Figueras, Spain. The three vessels were the *Zarqa Al Yamam,* the *Al-Shafq* and the *Al-Nasim*. The vessels were flagged in Liberia by the owners and then based in Tripoli. The vessels were designed to fish for tuna in the Mediterranean and Atlantic Ocean with a mixed crew of Japanese, European, and other nationalities. See the chapter on Libya for additional information.

181. William B. Folsom, "Fisheries of Liberia, 1976," Airgram A-44, U.S. Consulate General, Casablanca, Morocco, December 24, 1976.

182. William B. Folsom, *Op.Cit.*

183. *Ibid.*

184. "Liberia: Fishery Profile," *Op.Cit.*

185. FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993*, Vol. 76, Rome, 1995, p. 563.

186. "Liberia: Fishery Profile," *Op. Cit.*

187. ICCAT statistics did not report the 14 tons caught by Liberian fishermen in 1993. FAO, *Yearbook of Fishery Statistics - Catches and Landings, 1993*, Vol. 76, Rome, 1995, p. 563.

188. "Liberia: Fishery Profile," *Op.Cit.*

189. Randolph H. Fleitman, Commercial Officer, U.S. Embassy, Monrovia, letter dated April 13, 1988.

190. FAO, *Yearbook of Fishery Statistics - Commodities, 1993*, Vol. 77, Rome, 1995, p. 72.

191. FAO, *Op.Cit.*, p. 72.

192. Letter from Randolph H. Fleitman, *Op.Cit.*

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193. A. Houdrouge, SPR 0404 - Industrial Outlook Report: Fishing, U.S. Embassy, Dakar, July 12, 1988, p.1.

194. A. Dress, SPR 0404 - Industrial Outlook Report: Senegal's Fishing Industry, 1986 and 1987, U.S. Embassy, Dakar, Senegal, Airgram A-12, August 14, 1989, p. 14.

195. D. Charneau, *L'Economie du Thon au Senegal: Integration Nationale et Internationalisation de la Filiere,* Centre de Recherches Océanographiques de Dakar, Institut Sénégalais de Researches Agricoles, Document Scientifique, Numéro 109, April 1988, pp. 17-17.

196. Matteo Milazzo and Nick Burns, African Tuna Fisheries, Division of Foreign Fisheries Analysis, Office of International Fisheries Affairs, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C., October 1979, p. 10.

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198. A. Houdrouge, *Op.Cit.*, p.6.

199. ICCAT, *Statistical Bulletin,* Volume 24, 1993, Madrid, 1994, pp. 145-146.

200. These catches were identified as: "estimate by national scientist which does not agree with formal statistics, or where formal statistics are not available. ICCAT, *Statistical Bulletin,* Volume 24, 1993, Madrid, 1994, p. 146.

201. Matteo Milazzo and Nick Burns, African Tuna Fisheries, *Op.Cit.*, p. 10.

202. Michael Parfit, "Diminishing Returns, *National Geographic*, November 1995, p. 20.

203. EUROSTAT data.

204. "Pesquería Española del Pez Espada," Subdirección General de Recursos Internos Comunitarios, Direccion General de Recursos Pesqueros, Ministerio de Agricultura, Pesca y Alimentacion, Madrid, Spain.

205. D. Charneau, *Op.Cit.*, p. 410.

206. Moustapha Kebe, "Evaluation de l'impact de la flotte CEE dans les économies des pays côtiers africains: cas du Sénégal," *La Peche Maritime*, September 1992, p. 410.

207. "The European Community's Fishery Policy," Office for Official Publications of the European Communities, Luxembourg,1985, p. 55.

208. A. Houdrouge,*Op.Cit.*, p.4.

209. *Official Journal of the European Communities,* "Council Regulation (EEC) No 559/87 of 23 February 1987, on the conclusion of the Protocol establishing the fishing rights and financial compensation provided for in the Agreement between the European Economic Community and the Government of the Republic of Senegal on fishing off the coast of Senegal for the period from 1 October 1986, to 28 February 1988, No. L 57/1, February 27, 1987.

210. *Official Journal of the European Communities,* "Council Decision of 3 May 1988, on the conclusion of the Agreement in the form of an Exchange of Letters concerning the provisional application of the Protocol setting out the fishing rights and financial compensation provided for in the Agreement between the Government of the Republic of Senegal and the European Economic Community on fishing off the coast of Senegal for the period from 29 February 1988, to 28 February 1990, (88/296/EEC), No. L 127/15, May 20, 1988, and "Information for ITC Investigation," U.S. Embassy, Dakar, April 17, 1992.

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215. P. Cayré, *National Report of Senegal,* ICCAT, Report for biennial period, 1984-85 (Part II 1985), English version, Madrid, Spain, 1986, p. 267.

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SIERRA LEONE:

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220. FAO, *Fishery Country Profile: Sierra Leone,* Rome, August 1988, p. 2.

221. Geoffrey J. Williams, *The Fishing Industry of Sierra Leone: A Geographical Analysis*, unpublished report, p. 10.

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239. Farid Derbal, *Op.Cit.* p. 52.

240. ICCAT, *Report of the Ad Hoc GFCM/ICCAT Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea*, Oceanographic Center of Malaga, Fuengirola, Malaga, Spain, September 19-24, 1994, Ninth Special Meeting of the Commission, Madrid, November 28-December 2, 1994, COM-SCRS/94/21, p. 3.

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246. Farid Derbal, *Op.Cit.*, p. 52.

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249. *Ibid*, p. 58.

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252. "Pesquería Española del Pez Espada," Subdirección General de Recursos Internos Comunitarios, Direccion General de Recursos Pesqueros, Ministerio de Agricultura, Pesca y Alimentacion, Madrid, Spain.

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254. *Ibid*, p.38.

255. Swordfish are currently being caught throughout the year, with seasonal peaks.

256. A. Chalabi,*Op.Cit.*, p. 305.

257. Hadji Khedoud, "Algérie - l'indispensable modernisation," *Le Marin*, April 10, 1992, p. 27.

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CEUTA AND MELILLA:

260. Antonio Bermudez Bilbao, "La decadencia pesquera de Ceuta," *Industrias Pesqueras*, November 15, 1985, p. 9.

261. "Second tuna barge," *Fishing News International*, Spanish Supplement, September 1991, p. 7.

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ISRAEL:

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266. The agreement allowing Israeli vessels to fish in South Africa's waters was signed on May 3, 1978. The agreement was terminated in 1991. Michael Stuttaford, *South African Fishing Industry Handbook and Buyer's Guide, 1993 - Incorporating Namibia,* Twenty First Edition, Stellenbosch, South Africa, p. 17. The vessels have also been identified as the *Yam Suf* and the *Azgad 3*. The *Yam Suf* was sold to the Atlantic Company in 1970. An earlier vessel that fished in the southeastern Atlantic, the *Hiram*, was also sold in 1970.

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LIBYA:

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283. M. Santana Santana, of Seaway Company, Explanada Dársena del Castillo, 35008 Las Palmas, Gran Canaria was a member of the Libyan delegation to the Fourteenth Regular Meeting of ICCAT, held in Madrid, Spain on November 10-17, 1995.

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285. FAO, Op. Cit., p. 2.

286. ICCAT, *Op.Cit.*, pp. 6-7

287. FAO, Op.Cit., p. 6.

288. FAO, *Yearbook of Fishery Statistics - Commodies, 1993*, Vol. 77, Rome, 1995, p. 73.

289. FAO, *Op.Cit.*, p. 73.

290. FAO, *Libyan Arab Jamahiriya*, Fishery Country Profile, *Op. Cit.*, p. 6.

291. "Sicily's Fishing Industry: Its Status and Its Potential, American Consulate, Palermo, Italy. Airgram A-2 dated April 3, 1980.

292. "Europe moves into Japanese sashimi tuna market - Spanish yard's low temperature tuna longliner," *Fishing News International*, Spanish Supplement, September 1991, pp. 16-25.

293. ICCAT, *Op.Cit.*, p. 7

MOROCCO:

294. Morocco claims and administers the Western Sahara, but sovereignty is unresolved and the UN is attempting to hold a referendum. A UN-administered cease-fire has been in place since September 1991.

295. "Les pêches maritimes au Maroc," *La Pêche Maritime*, March 1993, p. 150.

296. A. Shrour, "La Pêche des Thonidés en Méditerranée Marocaine," ICCAT, *Collective Volume of Scientific Papers*, First Meeting of the Ad Hoc GFCM/ICCAT Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea, Madrid, Spain, 1995, p. 333.

297. A. Srour, "Etat Actuel de la Pêcherie Thoniere au Maroc," ICCAT, *Collective Volume of Scientific Papers*, Vol. XL (1), Second GFCM/ICCAT Expert Consultation on Stocks of Large Pelagic Fishes in the Mediterranean Sea, Iraklion, Crete, Greece, September 17-23, 1992, Madrid, Spain, 1993, pp. 234-235.

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300. A. Shrour, National Report of Morocco," *Op.Cit.*, pp. 372-373.

301. *Ibid*, pp. 372-373.

302. Gabriella Bianchi, *Guide des Ressources Halieutiques de l'Atlantiue Marocain*, Organisation des nations Unies pour l'Alimentation et l'Agriculture, Fiches FAO d'Identification des Espèces pour les Besoins de la Pêche, Institute Scientifique des Pêches Maritimes, Project: PNUD/FAO, MOR/81/002, Rome, 1984, p. 65.

303. "Ocean Fisheries Minister on Strategy for Exploiting Fish Resources," Al-SHARQ AL-AWSAT in Arabic, September 10, 1991, p. 10, NEAR EAST/SOUTH ASIA, JPRS-TEN-91-020, p. 39.

304. "Les pêches maritimes au Maroc," *Op.Cit.*, p. 154.

305. A. Lahlou and A. Srour, *Op.Cit.*, p. 276.

306. "Les pêches maritimes au Maroc," *Op.Cit.*, p. 154.

307. *Ibid*, p. 155.

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310. Decret No. 1154/88 dated October 3, 1988, and Ministerial Decree dated April 20, 1992. A. Lahlou and A. Srour, "Note sur la Pêcherie Marocaine des Thons et Espèces Voisines," ICCAT, *Collective Volume of Scientific Papers*, Vol. XLIV (3), SCRS, Madrid, 1995, p. 276.

311. A. Lahlou and A. Srour, *Op.Cit.*, p. 277.

312. A. Srour, National Report of Morocco," *Op.Cit.*, p. 7.

TUNISIA:

313. Office of Naval Intelligence, U.S. Navy.

314. Abdallah Hattour, "La pêche de l'espadon (*Xiphias gladius, L.*) en Tunisie: Analyse préliminaire de la relation taille poids," Institute National Scientifique et Technique d'Océanographie et de Pêche," GFCM-ICCAT/95/9 and SCRS/95/49 and ICCAT, *Report of the Ad Hoc GFCM/ICCAT Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea*, Oceanographic Center of Malaga, Fuengirola, Malaga, Spain, September 19-24, 1994, Ninth Special Meeting of the Commission, Madrid, November 28-December 2, 1994, COM-SCRS/94/21, p. 8.

315. Abdallah Hattour, *Op.Cit.*

316. Néjib Drissi, "Le techniques de pêche utilisées en Tunisie," *Les Cahiers de La Presse*, September 1988, p. 14.

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319. ICCAT, *Report of the Ad Hoc GFCM/ICCAT Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea*, *Op.Cit.*, p. 9.

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321. ICCAT, *Report of the Ad Hoc GFCM/ICCAT Working Group on Stocks of Large Pelagic Fishes in the Mediterranean Sea*, *Op.Cit.*, p. 8.

322. These are not the most important ports in terms of total landings of all species. See William B. Folsom, *Fisheries of Tunisia, 1976*, Foreign Fisheries Leaflet No. 78-1, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C. March 1978, p.8.

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326. "Tunisian authorities release Italian fishing boats," U.S. Embassy, Rome, January 28, 1976.

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